DRUG & COSMETIC INDUSTRY

MAY 1959

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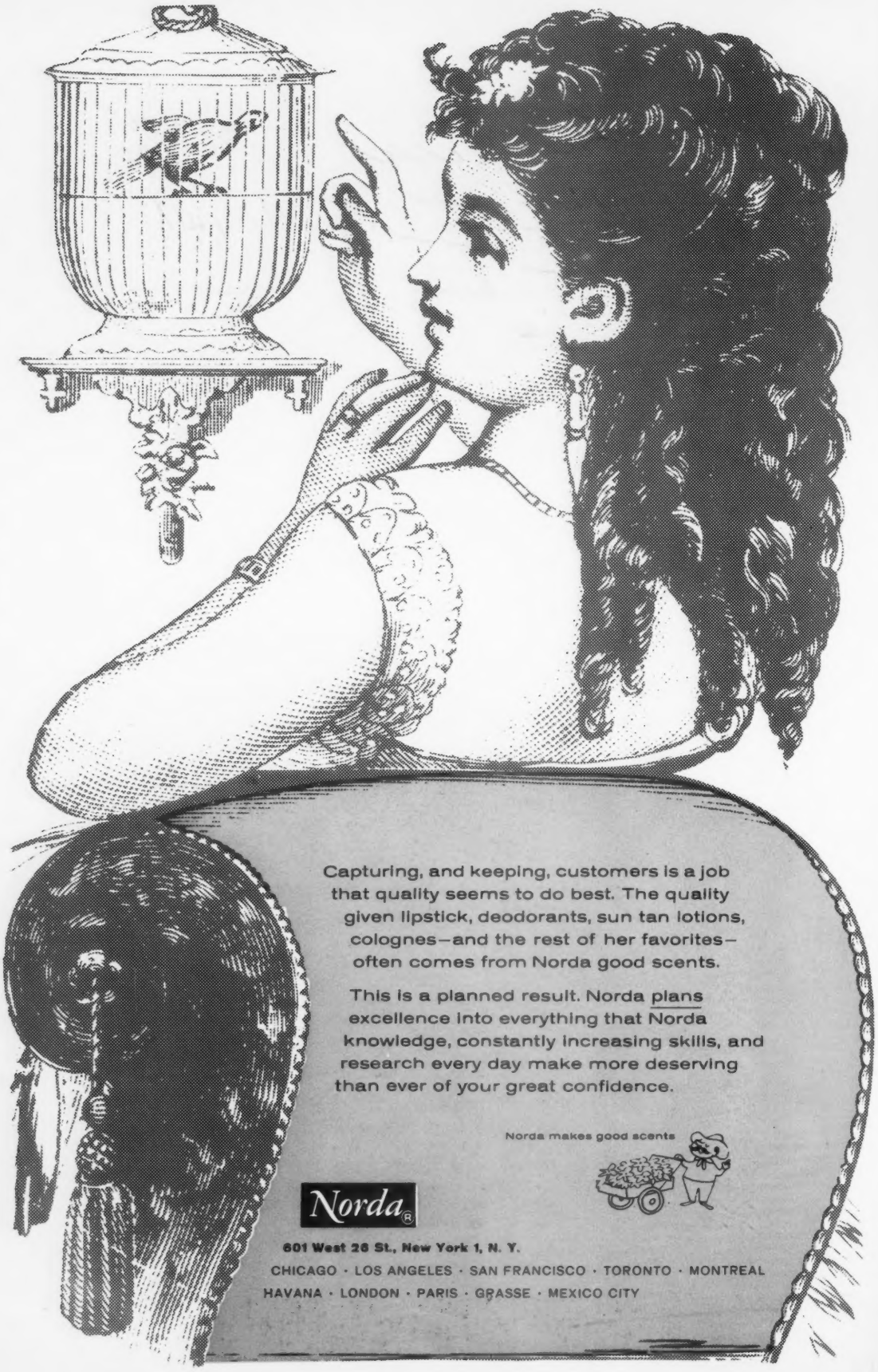

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Drug and Cosmetic Industry

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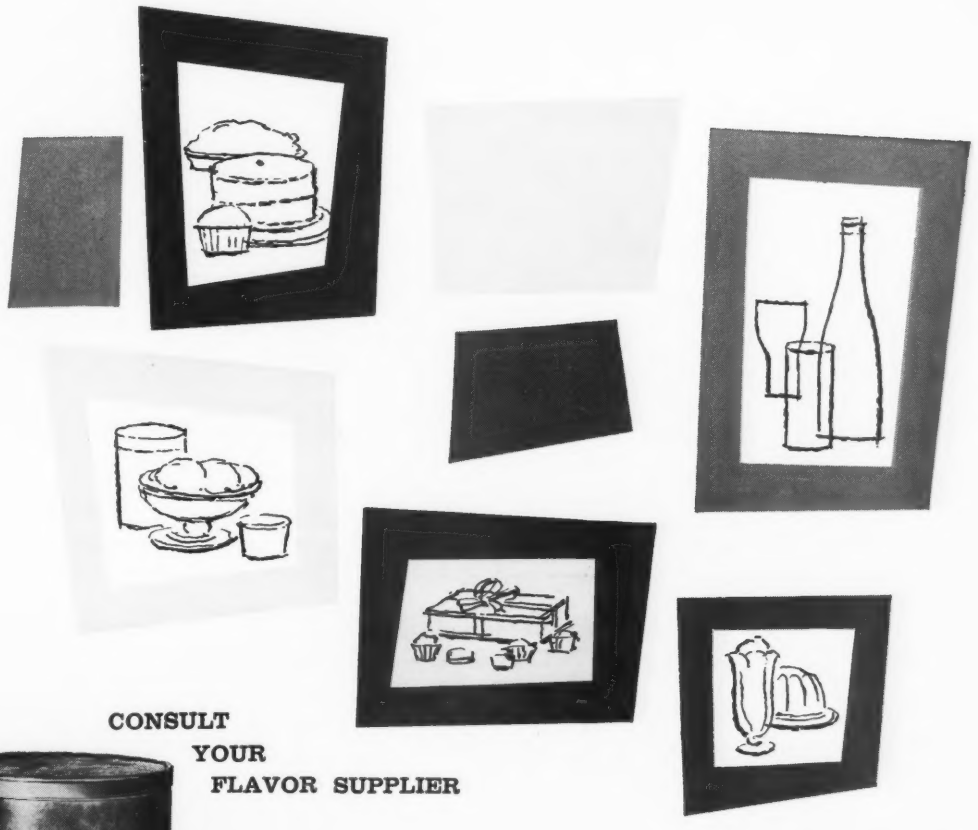

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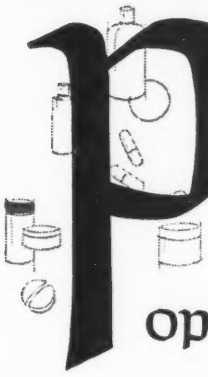

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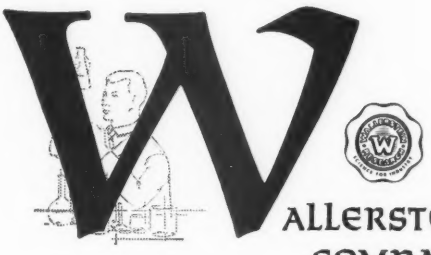

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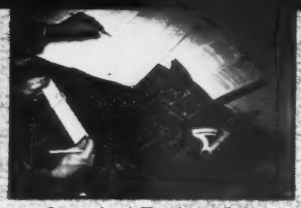

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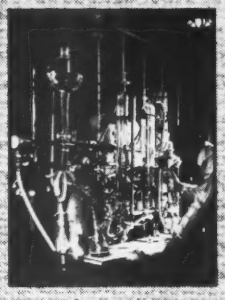

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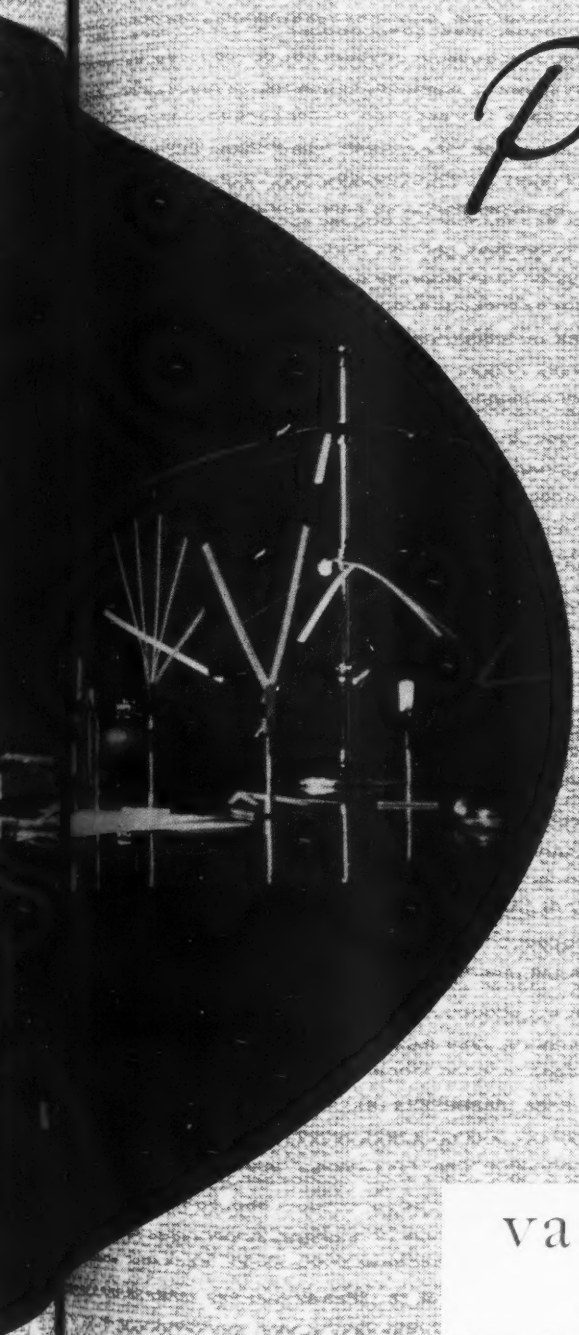

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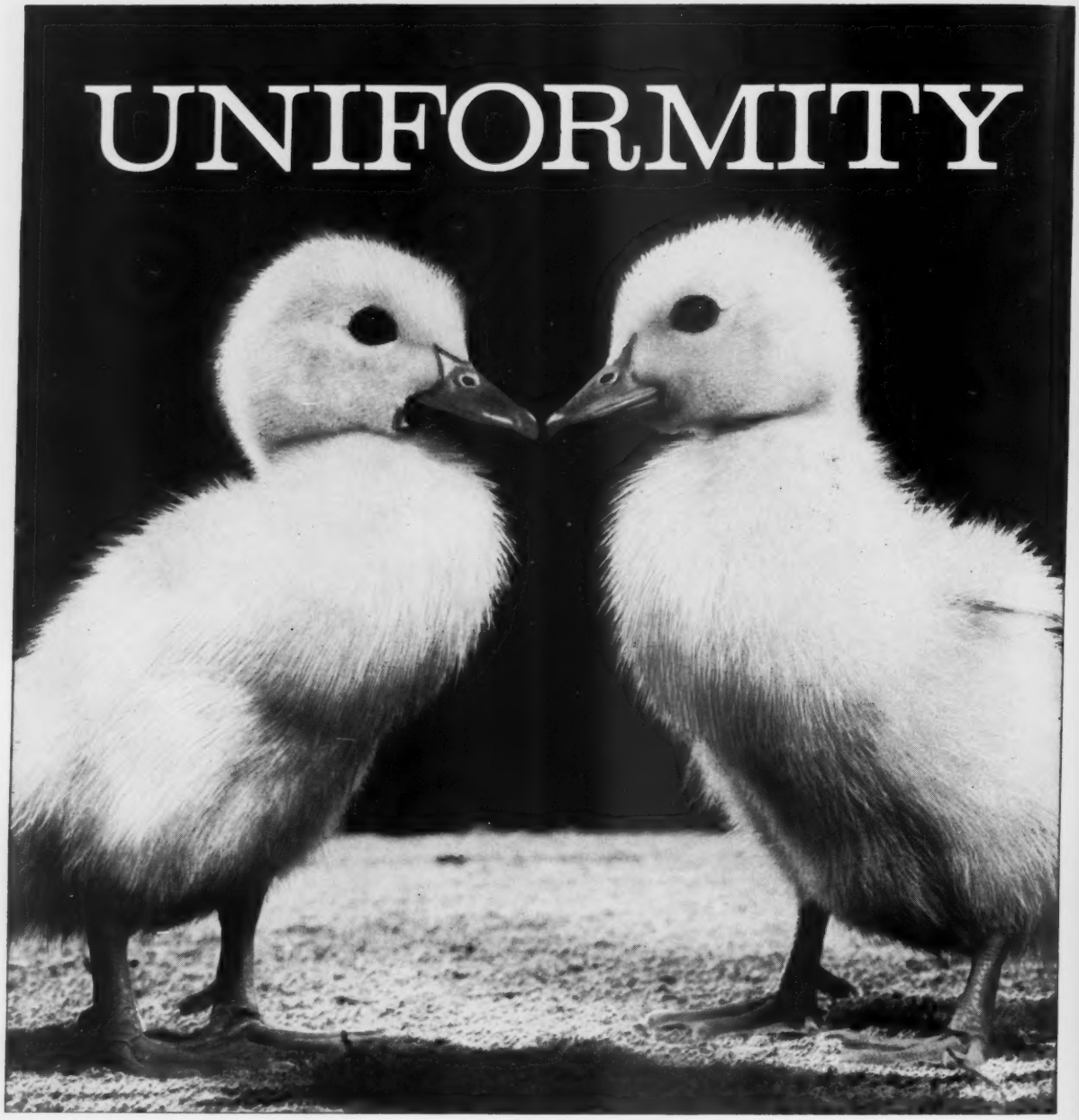

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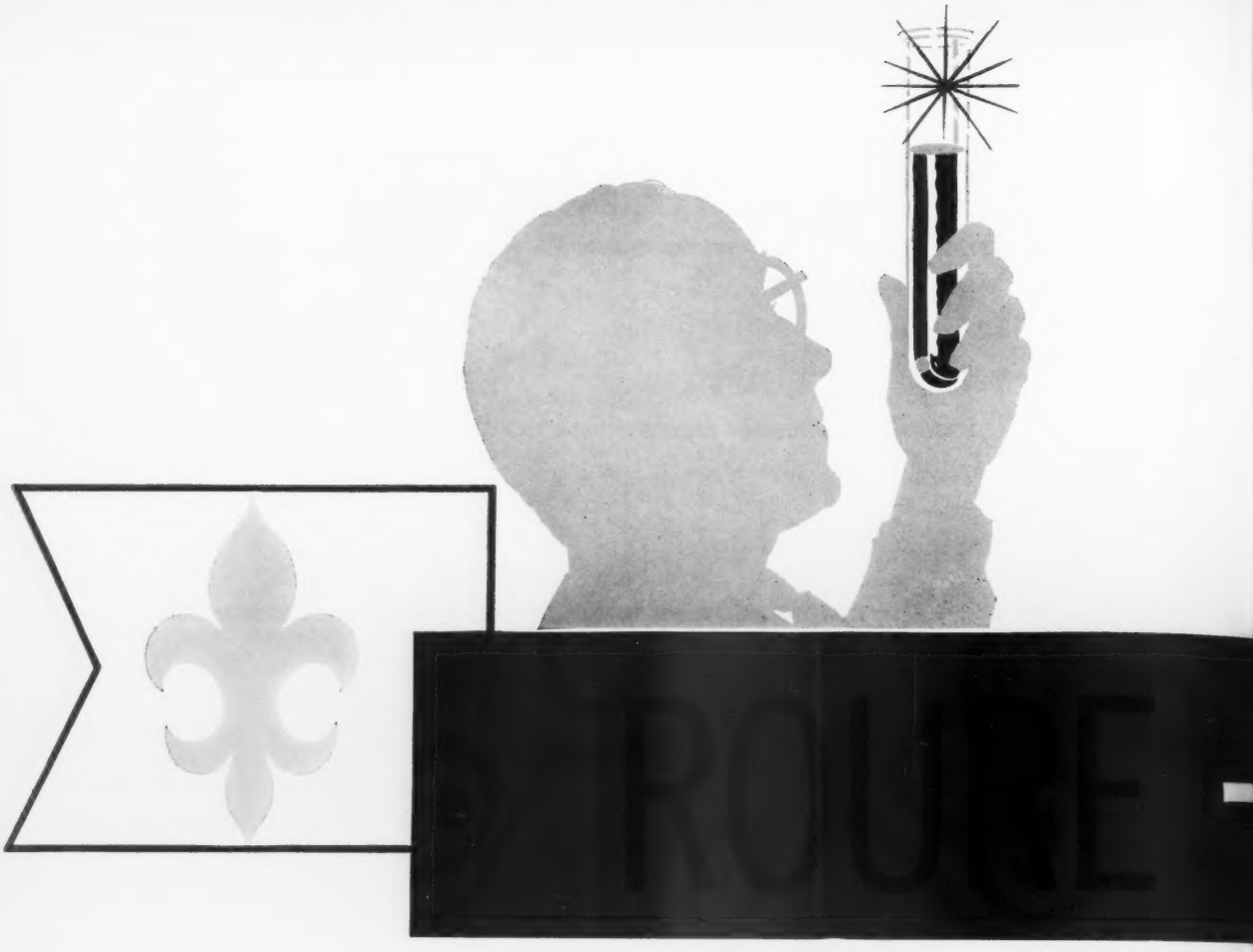

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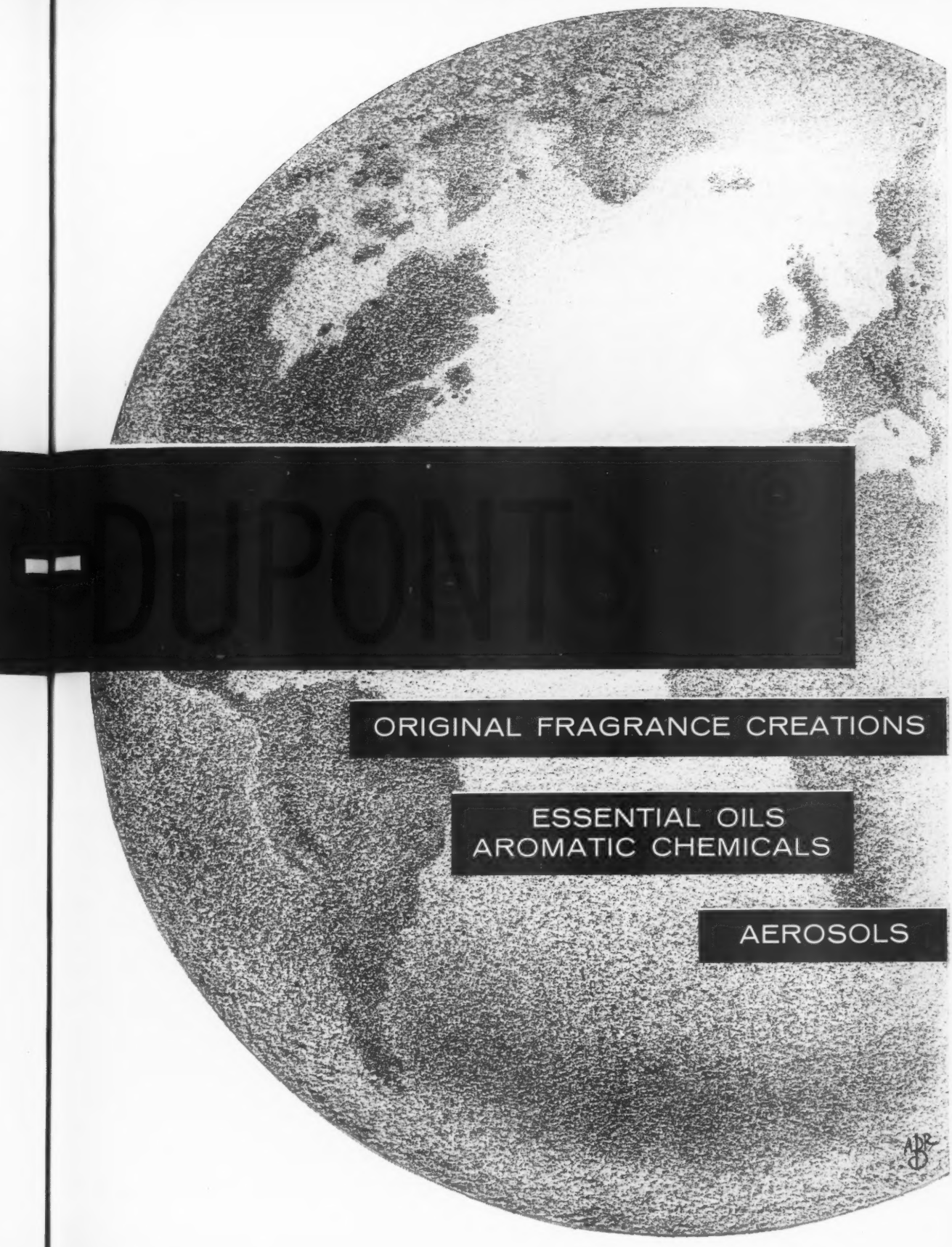
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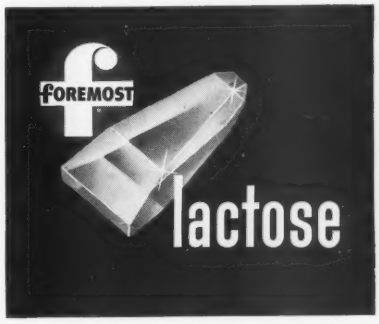

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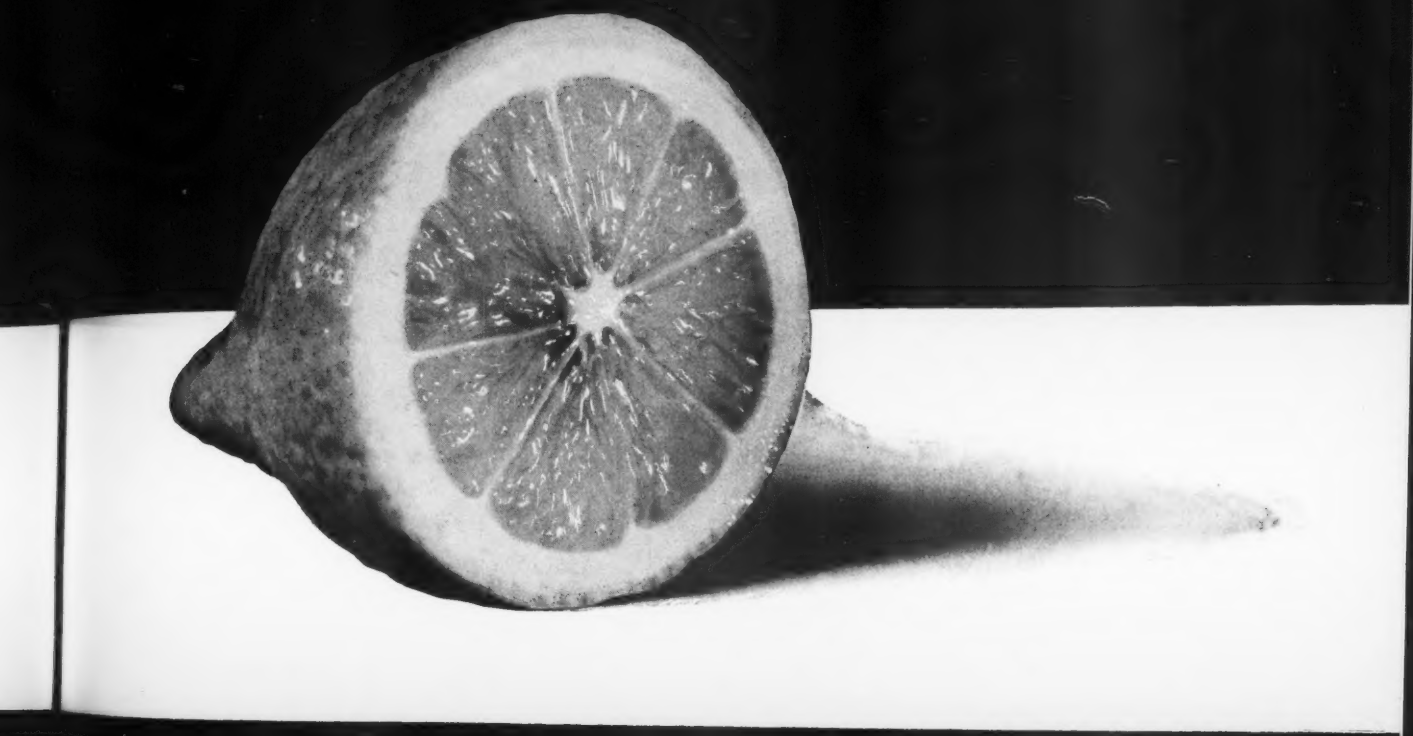
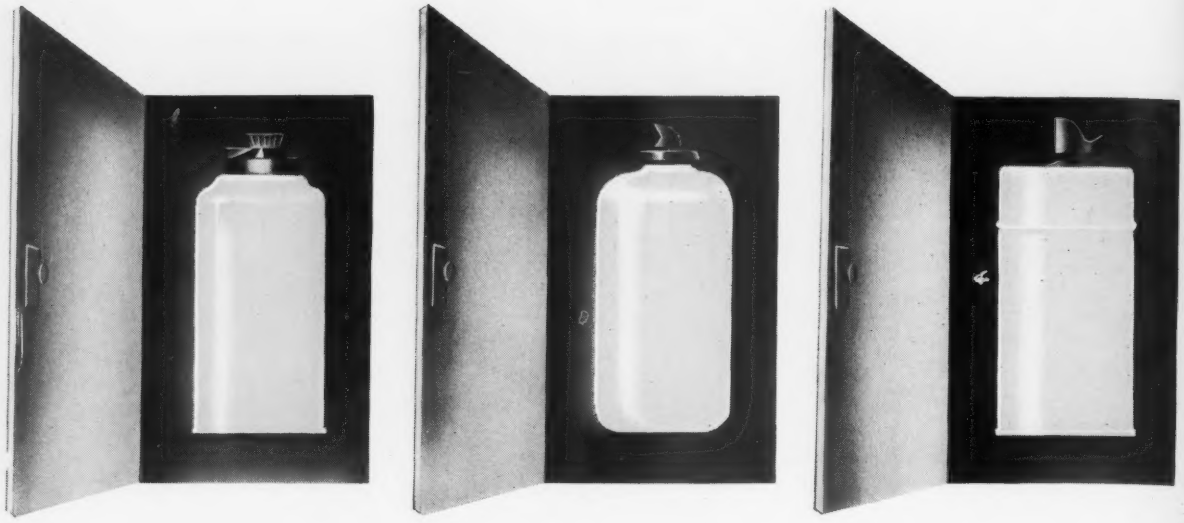


Note further details and suggestions from our data sheet.

Opening New Doors



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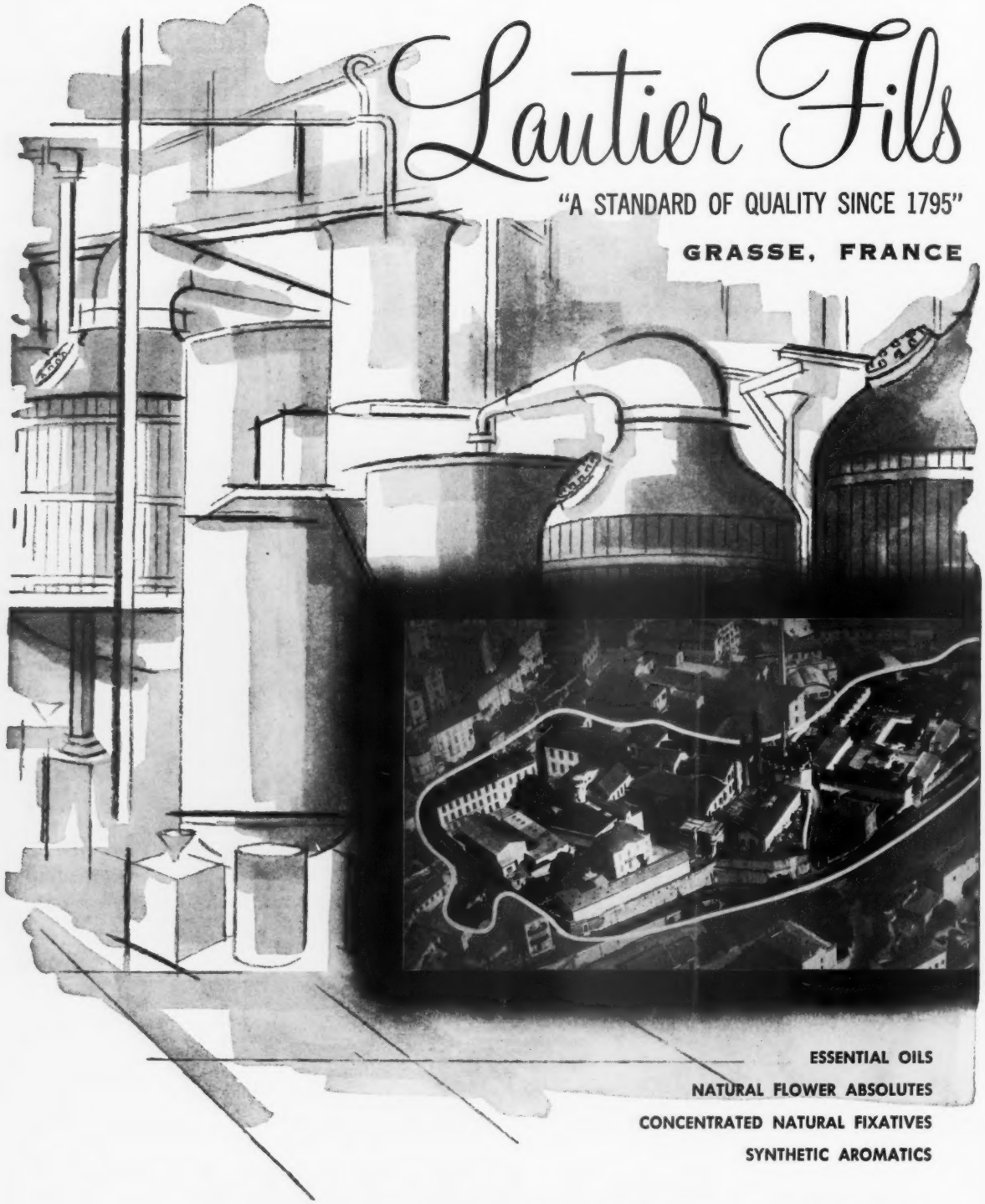

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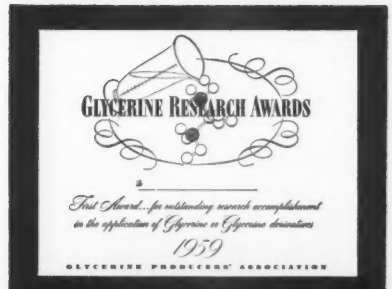
BASIS OF ENTRY – These awards are open to any individual in the United States or Canada engaged in research, either in industry or with government or educational institutions. Entries by research teams of two or three associates are eligible.

First consideration will be given to work which has come to a clear-cut point of accomplishment during the current year; but work carried on in previous years, the significance of which has been confirmed by commercial application in 1959, also will be eligible.

Entries will be judged by a committee of three persons of outstanding reputation and scientific background, having no connection with the Association or its members.

METHOD OF NOMINATION – Nominations must be made on the official entry blank, which may be obtained by writing to: Awards Committee, Glycerine Producers' Association, 295 Madison Avenue, New York 17, N. Y.

All nominations for the 1959 awards must be received by November 1, 1959 to be eligible.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1959
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1958

First
L. A. Goldblatt and R. S. McKinney
U. S. Department of Agriculture

Second
Dymtro Buchnea, University of Toronto

Third
Herman B. Wagner, Tile Council of America

1957

First
James L. Tullis
Harvard Medical School

Second
Guido V. Marinetti
University of Rochester

Third
C. G. Youngs and Henry R. Sallans
National Research Council of Canada

1956

First
Herbert J. Dutton
U. S. Department of Agriculture

Second
Donald Zilversmit
University of Tennessee

Third
Stanley G. Knight
University of Wisconsin

1955

First
Reed A. Gray
Merck & Co.

Second
Eugene P. Kennedy
University of Chicago

Third
Karl H. Lauer
University of Alabama

1954

First
Robert K. Summerbell
Northwestern University and
James R. Stephens, American Cyanamid Co.

Second
Two research teams:
Robert W. Swick and Akira Kakao
of Argonne National Laboratory and
Harland G. Wood and Per Schambye
of Western Reserve University

Third
Henry A. Sloviter, University of Pennsylvania

1953

First
Erich Baer, University of Toronto

Second
Lewis I. Gidez
Brookhaven National Laboratory and
Manfred L. Karnovsky
Harvard Medical School

Third
Albert C. Nuessle, Rohm & Haas and
Russell F. Crawford, Jr., Sharon Hill, Pa.

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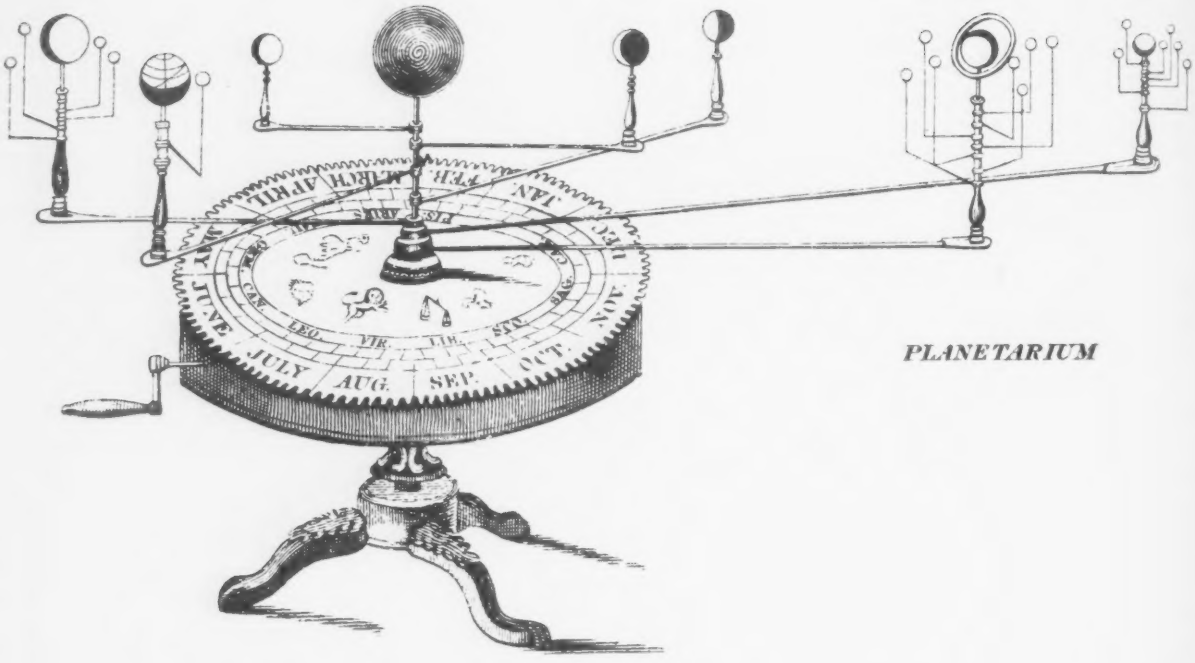

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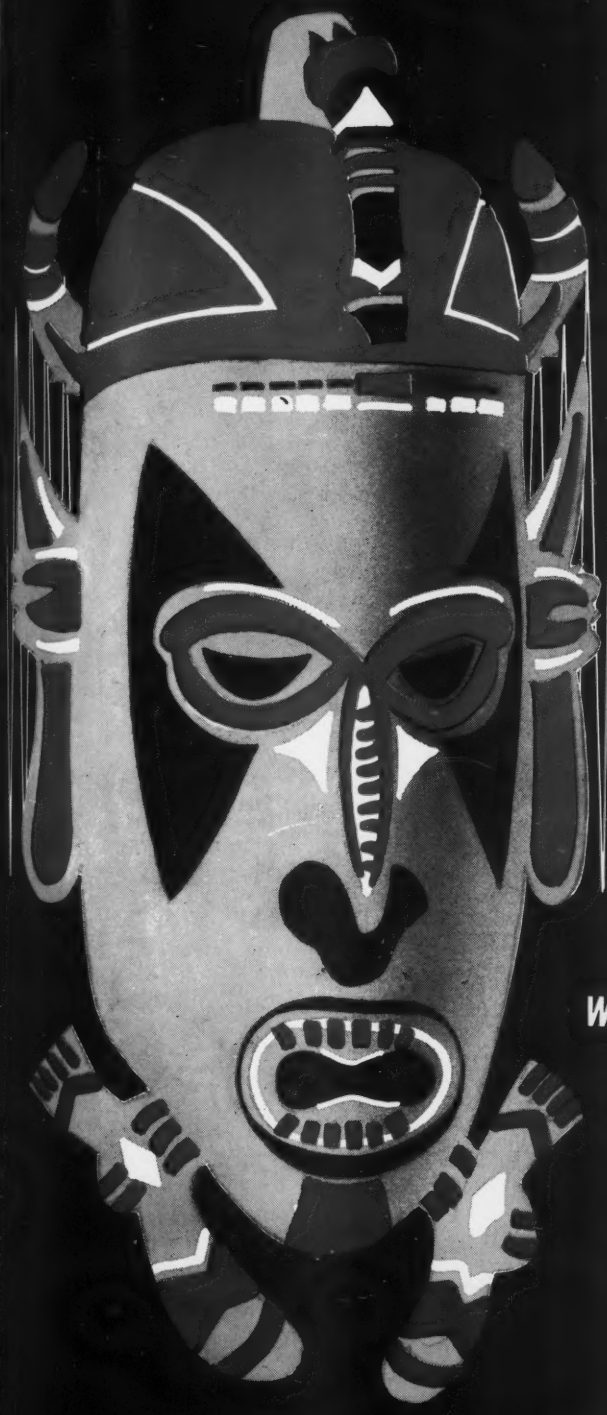

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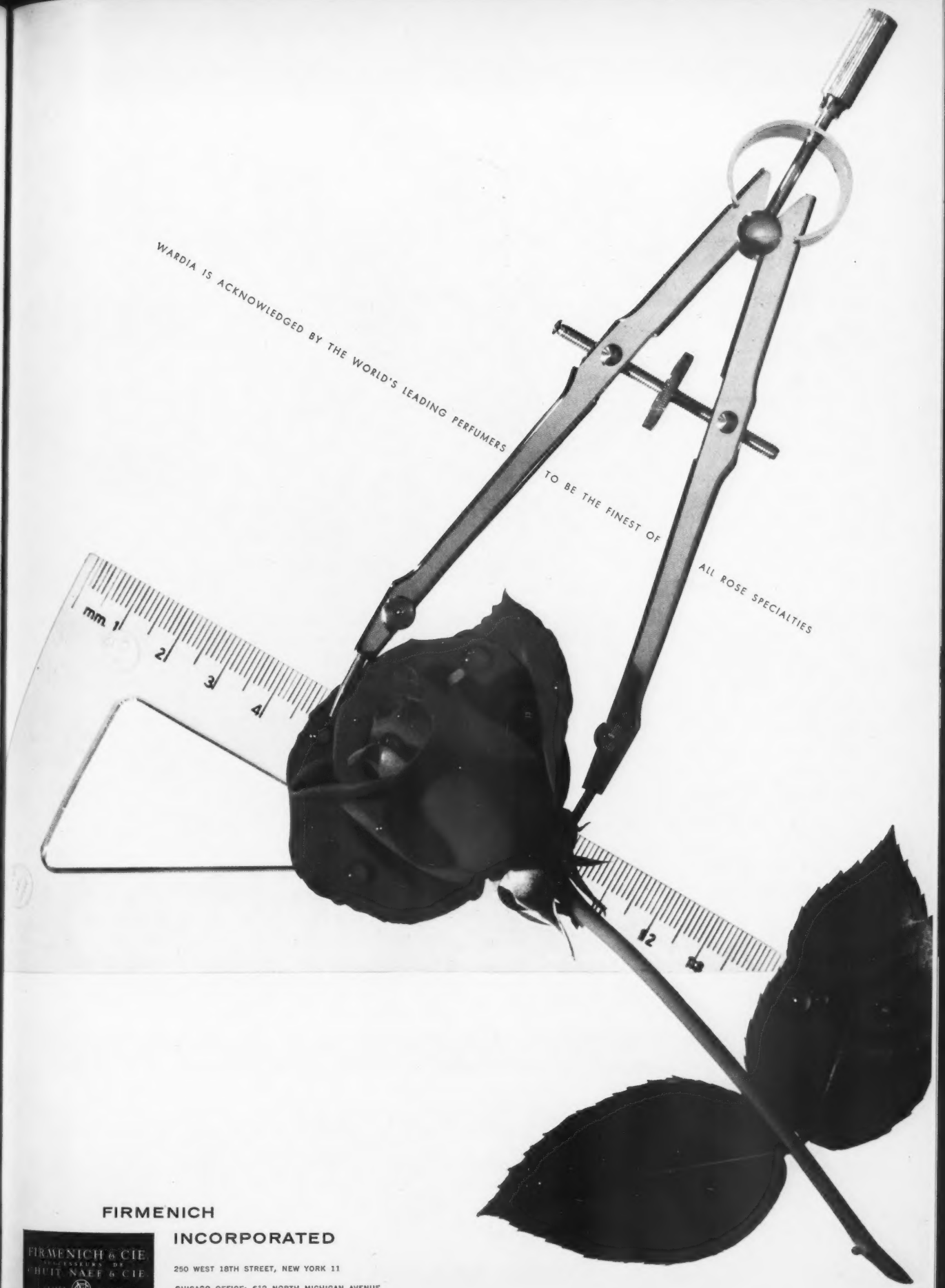

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Keeping Posted

Desired Drug Products

Dr. E. H. Volwiler, who retired as board chairman of Abbott Laboratories last month, and who was honored by members of the Abbott scientific divisions prior to his retirement, made some observations concerning drugs he would like to see developed. Stating that he was celebrating his 41st anniversary in pharmaceutical manufacturing, he listed some presents he would like to receive for "Let's say, my 45th anniversary." The presents would include: a good new pain reliever, non-habit forming; a superior hypotensive agent; a drug for atherosclerosis; a better agent against arthritis; an effective antibiotic against Gram-negative organisms; a new steroid, whether it be for arthritis, or as an anabolite, or as a contraceptive; a cure for cancer; and a better psychic energizer.

A Cold Vaccine

A vaccine which will prevent 60 to 70 per cent of all common colds will probably be available within the next 24 months, according to Dr. Thomas G. Ward, professor of virology at Notre Dame University. From 75 to 80 per cent of common colds are caused by a group of viruses or a group of ordinary bacteria of the streptococcus type, said Dr. Ward. Others may be allergy-symptom colds or psychosomatic. However, Dr. Ward observed: "People are not going to take the vaccine, just as they are not taking polio vaccine. . . . People are people and we have great difficulty in selling preventive medicine. The prevention of disease is not as glamorous or as consuming to the individual as his actual illness." Dr. Ward defined a common cold as one wherein the individual has a runny nose two days in succession. This is the nasal type cold which causes the lining of the nose to become reddened and inflamed. No fever is associated with it and it is the kind that may spread easily to other people. There is no drug now on the market that could be termed effective against common cold viruses. Colds caused by bacteria may respond to antibiotics and allergy-caused colds may respond to antihistaminics.

The British Health Service

Britain's National Health Service today includes 50 million people who spend $1,972,000,000 per year. Of this, $201,600,000 is for 230,000,000 prescriptions. In other words, the National Health Service costs $42 per head per annum, which is about as much as a laboring man earns in one and a half weeks. These and other facts regarding Britain's socialized medicine plan were revealed to the Pharmaceutical Manufacturers Association meeting by Dr. Thomas Keerfoot, president of the Association of the British Pharmaceutical Industry.

Of the $42 per head per annum, 10 per cent, or $4.20 is spent on pharmaceutical services, according to Dr. Keerfoot. In the first full year of the service, a slightly smaller population spent $1,218,000,000 of which $98,000,000 went for prescriptions.

"Thus the cost in ten years has more than doubled," said Dr. Keerfoot. "The total number of prescriptions has remained fairly constant, but the cost per prescription has gone up from 42 cents in 1949 to 83 cents in 1957.

"In this connection, it is interesting to note that whereas inflation has accounted for about half of the total increase in the cost of the service, the wholesale price index for drugs and pharmaceuticals has risen by six per cent in the first ten years of the Service and we have shown that the prices charged by a representative number of manufacturers of ethical specialties has shown a marked downward trend in the past five or six years.

"Thus, it would seem that the increase in the cost of the drug bill is in large measure due to the prescrib-

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ing of larger quantities of inherently more costly drugs. As most of these newer drugs have been marketed under brand names as medical specialties, there has been a marked swing away from the unbranded standard drug. In the first year of the National Health Service about 18 per cent of all prescriptions was for specialties; today it is about 50 per cent."
In the first year of the Service the industry was paid about $39,200,000 for drugs, excluding supplies to hospitals, while in 1957 it was paid $114,800,000.

Honored Druggists

Morris Glasner, Glasner Drug Co., St. Louis, and Harold J. Sanders, Sanders Prescription Pharmacy, St. Albans, Vermont, were honored by the Brand Names Foundation last month as the nation's outstanding Drug Store—Class I and Drug Store—Class II. Also four Certificates of Distinction were presented to runners-up in each category. In Class I, these were bestowed on Phil Small, Parkview Drugs, Kansas City, Missouri; Robert W. Campbell, The Standard Drug Co., Cleveland; Charles B. Williams, Williams Drug Co., Waco, Texas; and T. C. Gunning, Gunning-Casteel, El Paso, Texas. In Class II these winners were: Paul A. Smith, Buschbaum, Buschbaum Drug Store, Fort Wayne, Indiana; William J. Koch, Pharmacists, Milwaukee, Wisconsin; M. A. Lauer, Kreiser Drug, Watertown, South Dakota; and Frederick D. Lascoff, J. Leon Lascoff & Sons, New York.

Technical People in the Drug Industry

Technically and scientifically trained personnel will play an increasingly more important part in policy-making and management levels of the drug industry, Robert A. Hardt, president of the Armour Pharmaceutical Company told the Parenteral Drug Association. Business-industrialists have a place in the pharmaceutical industry, he said, but they need the guidance of men "with a grasp of our objectives" producing the world's best pharmaceuticals while recognizing the need for payment of dividends.
While the word "Parenteral" is well-known to physicians, pharmacists, and other technically trained persons to mean the intravenous or intramuscular administration of drugs, Mr. Hardt predicted that "some bright person of vision" will find or evolve a better word to describe such administration of drugs. Although many drugs developed for parenteral application find their way into the blood stream via the oral route, said Mr. Hardt, injectibles will always be important because administration by injection is the most direct of all routes although not always the most convenient or the most pleasant. The rapid assimilation of parenteral medicaments will continue to make them important to the physician in conditions of emergency and stress, he said.
Mr. Hardt predicted that electronics and radioactivity will play an increasingly important role in the production and testing of products for parenteral administration. He also predicted that ways and means will be found to reduce the incidence and severity of reactions to drugs administered by injection.

Pfizer Grants Total $1.4 Milion

Chas. Pfizer & Co. and the Pfizer Foundation, during 1958, made grants totalling $1.4 million to more than 60 colleges and universities for advanced studies in medical, chemical, and agricultural sciences. Investigations ranged from the effectiveness of a new oral drug for diabetes to the administration of tranquilizers to beef cattle.
The company earmarked $236,000 for individual resident physicians, pharmacy internes and students to aid in the completion of their education. The grants covered a broad scientific frontier including long-range nutritional studies among Haitian schoolchildren, 46 individual grants to graduating doctors from medical colleges in Japan for post graduate studies, and a grant to the American University in Beirut for studies in infectious disease and parasitology chemotherapy.

PMA and Public Relations

Now that the Pharmaceutical Manufacturers Association has engaged Dr. Austin Smith as a paid full-time president with emphasis on public relations and the best possible presentation of the industry to the public, interest naturally turns to what function the Health News Institute will play in the picture.
The HNI was a creation of the American Drug Manufacturers Association with the close cooperation of the American Pharmaceutical Manufacturers Association. These two organization are now merged into the Pharmaceutical Manufacturers Association. Other organizations in the drug field were invited to contribute to the support of the HNI, but these outside contributions were not very substantial. The extent of the contributions can be measured somewhat by the number of representatives that each association has on the board of trustees. The PMA has twelve members out of a total of twenty. Others are: National Wholesale Druggists Association 2; National Association of Retail Druggists Association 2; American Pharmaceutical Association 1; Proprietary Association 1; Federal Wholesale Druggists Association 1. The National Association of Chain Drug Stores also has a representative on the board, although this association is not listed as a contributor. Several individual companies are listed as contributors for 1958. These are: Carter Products, Inc., Eli Lilly and Company, Vick Chemical Company, Bristol-Myers Products Division, and Sterling Drug, Inc. Contributions to HNI for 1958 totaled $151,750. Disbursements for the year totaled $155,149.33 of which $39,565.83 was spent for production of the booklet, "Facts about Pharmacy and Pharmaceuticals. During the year HNI received $15,574.95 from the sale

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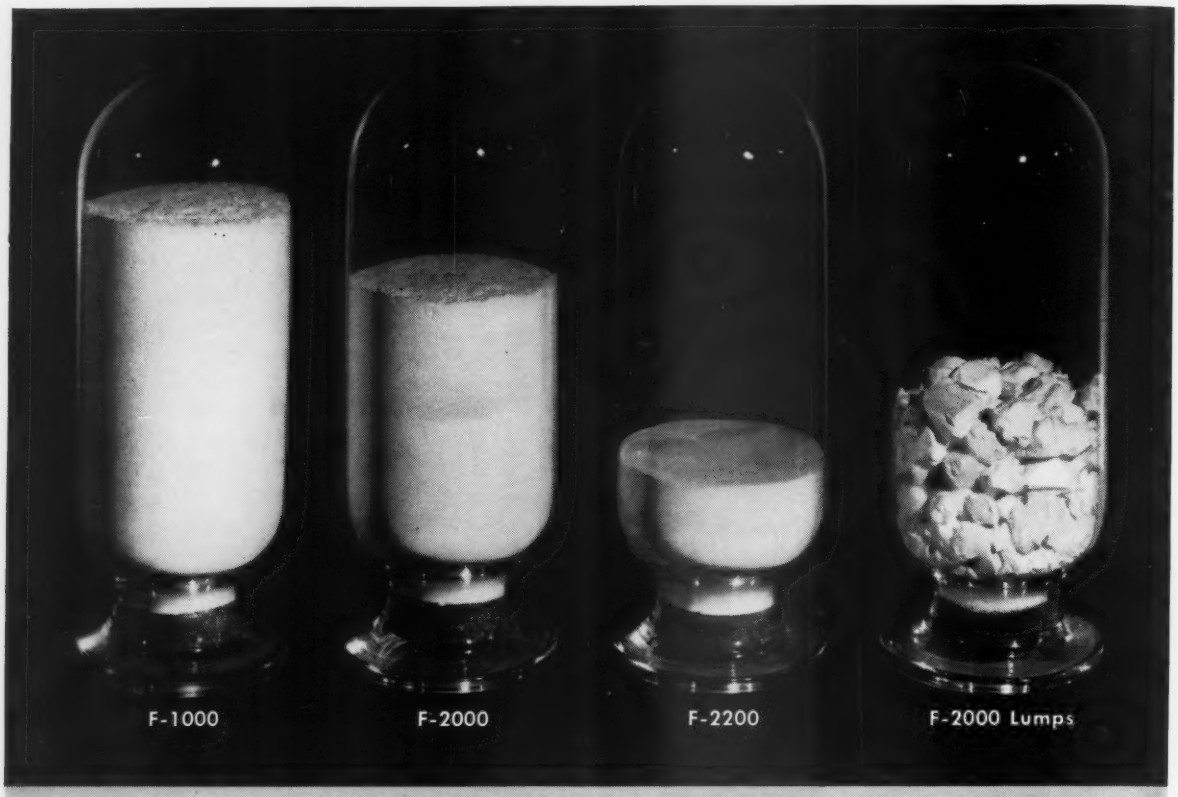

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Grams per cc.....	.13	.17	.44	.25
cc. per gram.....	8	6	2¼	4
Lbs./cu. ft.....	8	10.5	27.5	16.5
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of copies of this booklet and the booklet published in 1957 entitled "The Pharmaceutical Story."

With a separate set-up and salaries of about $58,000, it is being asked whether or not this function will be absorbed by the PMA and possibly moved to Washington under the direct control of Dr. Smith. There are many who feel that HNI is doing an excellent job, but there are those who feel that under the change of set-up in the PMA, the HNI might represent duplication of effort. At least they feel, that since PMA is paying such a high percentage of the freight, it should merge the operation with its own. The expanded public relations job being undertaken by PMA will call for more money from the members in dues in future years, according to indications. Whether PMA will want, in addition, to pay the entire cost of the HNI operation is something that has not as yet been revealed.

Dr. Holland on Restrictive Sales

"If pharmacy approached it (the restrictive sales controversy) realistically, differences could shortly be reconciled and workable compromises reached." Dr. A. H. Holland Jr., formerly of the Food and Drug Administration and now of Cortez F. Enloe, Inc., told the Beta Gamma Chapter of Rho Chi Society, of Columbia College of Pharmacy. "Unfortunately pharmacy is not realistic and on occasion not even reasonable," he continued, "I believe that this course will not favorably serve the ultimate objectives of your profession . . . Why should pharmacy feel righteously proper about selling electric light plugs, shoe polish, pottery, garden equipment, pots, pans and hardware, toys, books, birds, records—both regular and L.P.—school supplies and assorted junk—in effect invade almost every other field of marketing, yet cry 'uncle' when proprietaries are sold in non-drug outlets. The recent, successful trend to self-service stores certainly belies any claims relative to concern for public health. There can be no question about the distribution of prescription drugs by licensed pharmacists. You enjoy the strong support of the medical profession on this score. I seriously doubt, however, that your views about proprietaries could withstand critical public scrutiny. The Federal Food, Drug, and Cosmetic Act does not discriminate concerning the marketing outlets for non-prescription drugs. Pharmacy should constructively concentrate on keeping the non-prescription products—the so-called over-the-counter ethicals in the drug store and forego the issue of monopolizing proprietary sales. You don't have a monopoly, I don't think you can recapture it, but I fear your present course may unwittingly lead to the possible loss of all non-prescription items. The situation is explosive and awaits only the appearance on the scene of a resourceful, enterprising merchant who is willing to challenge your entire non-prescription domain. This, I believe would be regrettable and unfortunate. I trust it never occurs, but only you can take the necessary steps to preclude it. You must lead or be led."

The Widening Drug Makers

As the drug industry expands due to the rapid discovery and wide use of new effective therapeutic agents, the distinction that once existed among pharmaceutical manufacturers as to the types of pharmaceutical specialties they produced is largely disappearing. No longer are leading pharmaceutical manufacturers conducting their research in only one or a few of the types for which they have a particular reputation, but today they conduct research for practically all types of drug products.

Years ago duplication was common. That is, if one manufacturer produced a particularly effective preparation, other manufacturers would bring out the same product. Today this cannot be done so easily as most new drugs represent the results of original research and are patented so that only the discoverer can market them. However, research being what it is, the time lag is not long before another manufacturer produces a similar product from his own research which closely approaches in therapeutic effect the product already on the market. Generally the new product is presented as more effective and with far fewer side-effects.

Because of the great extent of the market for pharmaceuticals in this country and abroad that exists today, most leading pharmaceutical manufacturers, even though they reach extremely new heights due to a new and totally unique type of product, rapidly start to try to broaden their bases by spending for research in the types of products made famous by others. Thus we have manufacturers broadening their fields by entering the tranquilizer market, the biological market, the antibiotic market, the steroid hormone market, or any other market which shows promise. And this activity is becoming more and more rapid.

This is not duplication in the ordinary sense. While there may be instances where the products are the same due to licensing agreements, or due to the fact that some vaccines or other preparations are basically the same, the main object of this sort of product production is to produce better products than those already on the market. Also, as in the case of tranquilizers, antibiotics, steroid hormones, antihistamines, and some other types of drugs, the presence on the market of a number of drugs of each type gives the physicians a choice of drugs to use, which is very important to them.

While the wholesalers and retailers of drug preparations do not like any situation which causes an increase in the number of preparations which they have to stock, it is essential that they adjust themselves to conditions as they exist and as they will continue to exist—even to a greater degree—as con-

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tinued progress in the pharmaceutical manufacturing industry produces more and more new effective products.

Cosmetic Sales Up 6.5%

Retail sales of perfumes, cosmetics, and other toilet preparations, *excluding toilet soaps*, for the year 1958 are estimated at $1,523,700,000 by the Toilet Goods Association. This is an increase of almost exactly 6.5 per cent over the previous record of $1,430,000,000 set in 1957. The TGA says: "In view of the so-called 'business recession' which occurred during the early part of the year, an increase of this kind seems remarkable. The increase was spread quite generally over the entire range of toilet preparations." Further comments by the TGA are:

"While sales of perfumes were up slightly, sales of toilet water and cologne were sufficient to bring about a substantial increase for this group. Hair preparations did not go ahead quite at the rate of the past few years but there was a considerable increase in this field, especially in aerosol spray products and in hair coloring materials of various types. Apparently the newer hair styles have still further discouraged the use of home permanent waving materials the sales for which declined during the year.

"Sales of dentifrices increased by more than 12 per cent, a very substantial increase over previous years, thereby carrying out the trend which has been in evidence in this important segment of the industry over the past several years. Sales of shaving creams were up about 2 per cent accounted for by a substantial increase in aerosol types of shaving creams. Other men's products increased steadily but not spectacularly during the year although there was a show of increased popularity among colognes designed especially for men.

"In make-up, sales of lipsticks continued to increase somewhat more rapidly than the increase in population would seem to warrant. Sales of cake powder and other so-called foundation products showed a fair rise but sales of loose powder continued their former decline.

"Food stores continued to dominate the increase in the various types of outlets, and reached a total far higher than any preceding year. Sales through this type of outlet are estimated to represent 22.3 per cent of the total market. Sales through drug stores while higher than last year, continued to decline percentage-wise with this type accounting for 27.1 per cent. Sales through department stores also declined percentage-wise to 19.2 per cent and sales by house-to-house distributors increased only slightly, the level of these sales being estimated at 20 per cent of the total market. Variety store sales showed a fair increase to 7.9 per cent of the market probably accounted for in part by the 'recession in business'."

The following table shows sales through these various types of outlets since 1950:

	Chain & independent Drug stores	Dept. & specialty stores	Food stores	House-to-house	Ltd. Price variety stores	All other outlets
1950	37.0%	27.0%	6.1%	14.0%	11.0%	4.9%
1951	36.0%	25.5%	8.5%	16.2%	10.0%	3.8%
1952	34.5%	22.0%	14.0%	17.5%	8.5%	3.5%
1953	32.0%	22.1%	15.5%	18.3%	8.4%	3.7%
1954	30.2%	22.5%	17.1%	19.4%	7.5%	3.3%
1955	29.4%	22.3%	17.9%	20.0%	7.3%	3.1%
1956	29.3%	21.6%	19.1%	19.6%	7.2%	3.2%
1957	28.6%	20.6%	20.3%	19.7%	7.3%	3.5%
1958	27.1%	19.2%	22.3%	20.0%	7.9%	3.5%

TGA estimates of the retail volume of perfume, cosmetic and toilet preparations for the past 45 years are:

Year	Sales in Millions of Dollars	Year	Sales in Millions of Dollars
1914	39.8	1937	374.0
1915	45.0	1938	412.3
1916	71.5	1939	425.1
1917	95.4	1940	449.9
1918	103.7	1941	463.6
1919	116.5	1942	481.4
1920	129.5	1943	507.5
1921	126.0	1944	593.0
1922	147.3	1945	711.3
1923	194.6	1946	758.2
1924	220.3	1947	743.8
1925	256.4	1948	749.8
1926	300.2	1949	770.8
1927	329.7	1950	840.1
1928	355.2	1951	912.8
1929	378.4	1952	1,004.0
1930	336.2	1953	1,020.8
1931	297.1	1954	1,086.8
1932	288.4	1955	1,192.2
1933	300.3	1956	1,321.0
1934	324.4	1957	1,430.7
1935	322.1	1958	1,523.7
1936	336.5		

Colgate Entering Drug Field

Because of the constantly expanding market and the satisfactory profit picture, everyone seems to want to get into the drug business. But the people who want in are not generally sure of just how to get in, nor are they certain whether they should enter the proprietary drug field, the prescription drug field, or both.

Most entrants into the drug product field have been cosmetic or toiletry manufacturers who have felt that the step was a simple one. It has not proven so from the results so far experienced.

The latest company to announce entry into the drug field is the Colgate-Palmolive Company, mainly a soap and synthetic detergent manufacturer but, throughout a great part of its existence, a marketer of cosmetics and toiletry products. It has been the leading seller of dentifrices longer than we care to remember.

Colgate board chairman and president, Edward H. Little, told stockholders at the annual meeting last month that the company will get into the drug business "as fast as possible," and "will manufacture" both proprietary and ethical drugs sold only on prescription. He explained that since, through the company's large organization, the company had outlets to 45,000 druggists, the move is a logical one. He said that with the population growing as rapidly as it is and with Americans becoming "more health conscious," the drug business should grow "by leaps and

bounds." He indicated that the first move will be to make proprietary products, several of which are now under consideration. With regard to the ethical drug business, Mr. Little said that Colgate "is looking to acquire a small ethical drug house."

Herbert P. Nack's appointment as general manager of Colgate's newly created Drug Division was announced by Mr. Little. Mr. Nack joined Colgate directly from Johnson & Johnson, where he was director of the Professional Products Division, and where he also served as consultant to the president and executive committee on matters pertaining to the drug industry.

Prior to his connection with J. & J., Mr. Nack was, for two years, director of sales for the Wm. S. Merrell Company, an ethical drug division of Vick Chemical Company, and general manager of their Canadian company. He began in the industry as a territorial salesman for White Laboratories and was promoted to district manager. In 1949 he joined Chas. Pfizer & Co. where he became administrative vice-president and general manager of the Pfizer subsidiary, J. B. Roerig & Company.

FTC Tetracycline Cases to September

The tetracycline producers and distributors (Bristol Laboratories, Lederle Laboratories, Pfizer, Squibb, and Upjohn) will begin the defense of the charges brought against them by the Federal Trade Commission, on September 9. The Commission has rested its case against these companies, but meanwhile respondents had until May 4 to file motions; the FTC had to answer them by May 25; and the respondents must reply to these answers by June 15. While Hearing Examiner Robert Piper said that a motion to dismiss would probably fail, he agreed that it might be useful in making the Commission define its case more clearly.

Despite the contention of FTC lawyers that the cost studies submitted were not satisfactory, Examiner Piper ruled that they were an adequate substitute for the data originally called for in the FTC subpoena.

When the hearings resume in the fall, Pfizer will be the first to present its defense; three weeks will be allowed. American Cyanamid (Lederle), Bristol Laboratories, Bristol-Myers, Upjohn, and Olin Mathieson (Squibb) will follow in order, with two weeks each.

General Doctors for Drug Evaluation

Increased use of family doctors to help evaluate new drugs was suggested by Dr. Harold S. Feldman, of New York Medical College, as a means of bringing drug discoveries to patients faster with less chance of misuse. Dr. Feldman, a registered pharmacist, pharmacologist, and medical doctor, told a symposium on "The Clinical Evaluation of New Drugs," at the Albert Einstein Medical Center, Philadelphia, that general physicians are in a position to discover problems about side effects, dosage, and administration of new drugs that cannot otherwise be anticipated. There are problems that are highly unlikely to be met with so long as new drugs are employed experimentally only in teaching centers and mainly with hospitalized patients, he said. Clinical evaluation by general physicians on hundreds of patients in the home as well as in the hospital, would provide answers to questions that may arise with widespread general use of a drug.

A drug's advantages, contraindications, side effects, proper dosage, types of administration and comparison with other drugs, can be determined by concentrating clinical studies in teaching institutions, he said, but use of selected "advisor" family physicians in drug testing will speed up the acceptance of proven new drugs by overcoming a hesitancy on the part of some doctors to employ new therapeutic agents.

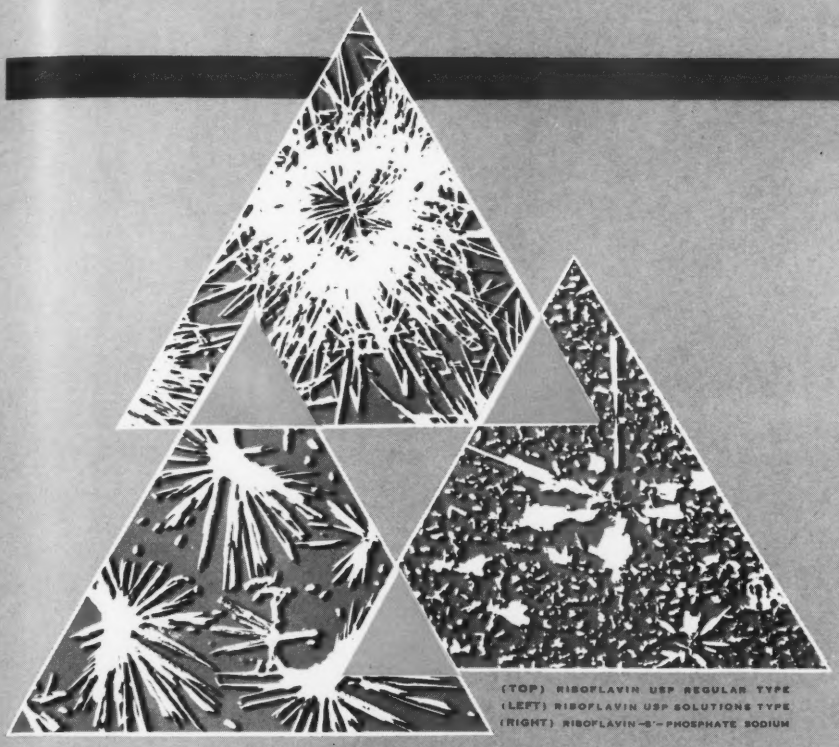
Dr. Julius Pomeranze, also of New York Medical College, said that the general physician considers a drug in relation to the individual patient, whose emotional state, physical condition, occupation and other factors, may influence the effectiveness of that drug. The clinical pharmacologist is interested in the activity of a drug as isolated from variations in order to set standards. From both approaches, pharmacologist and physician are faced with answering the same question: Is the drug good for the patient against this disease?

Proposed Warning Statements

The long-awaited compilation of proposed label warning statements for drugs and cosmetics to be eventually issued by the Food and Drug Administration under the provisions of the Federal Food, Drug, and Cosmetic Act, represent the first complete list of warnings statements issued since the first list issued shortly after the law was enacted in 1938. Sixty days after March 26th, that is, until May 25th, were allowed by the Commissioner of Food and Drugs for interested persons to submit their views in writing to the Hearing Clerk, Department of Health, Education and Welfare, Washington, D. C. A statement by the FDA regarding the warning statements says:

"The FDA compilation is published as a proposal to provide opportunity for comment on the suggested wording of warnings not previously published. For convenience in bringing together all types of label warnings, the compilation includes specific warnings required by law or regulations. FDA emphasizes that they do not cover all over-the-counter drug products subject to label warning requirements."

The FDA has made it clear that the kind of comment they want with respect to the proposed warning statements should deal with the "medical or pharmacological facts concerning the various products."



(TOP) RIBOFLAVIN USP REGULAR TYPE
(LEFT) RIBOFLAVIN USP SOLUTIONS TYPE
(RIGHT) RIBOFLAVIN-5'-PHOSPHATE SODIUM

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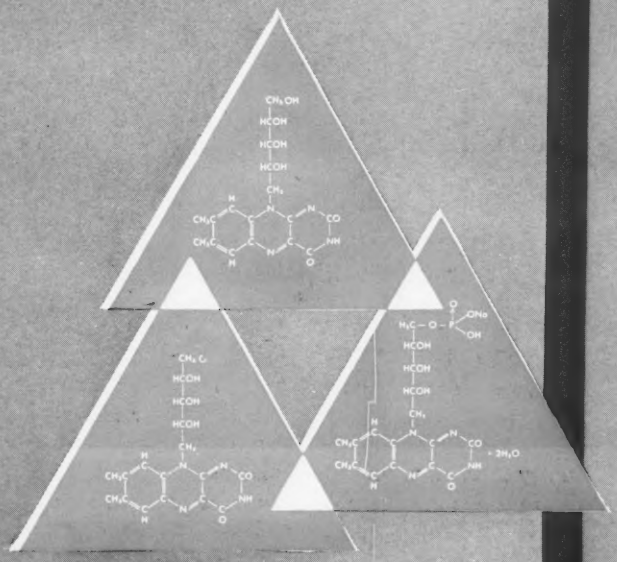

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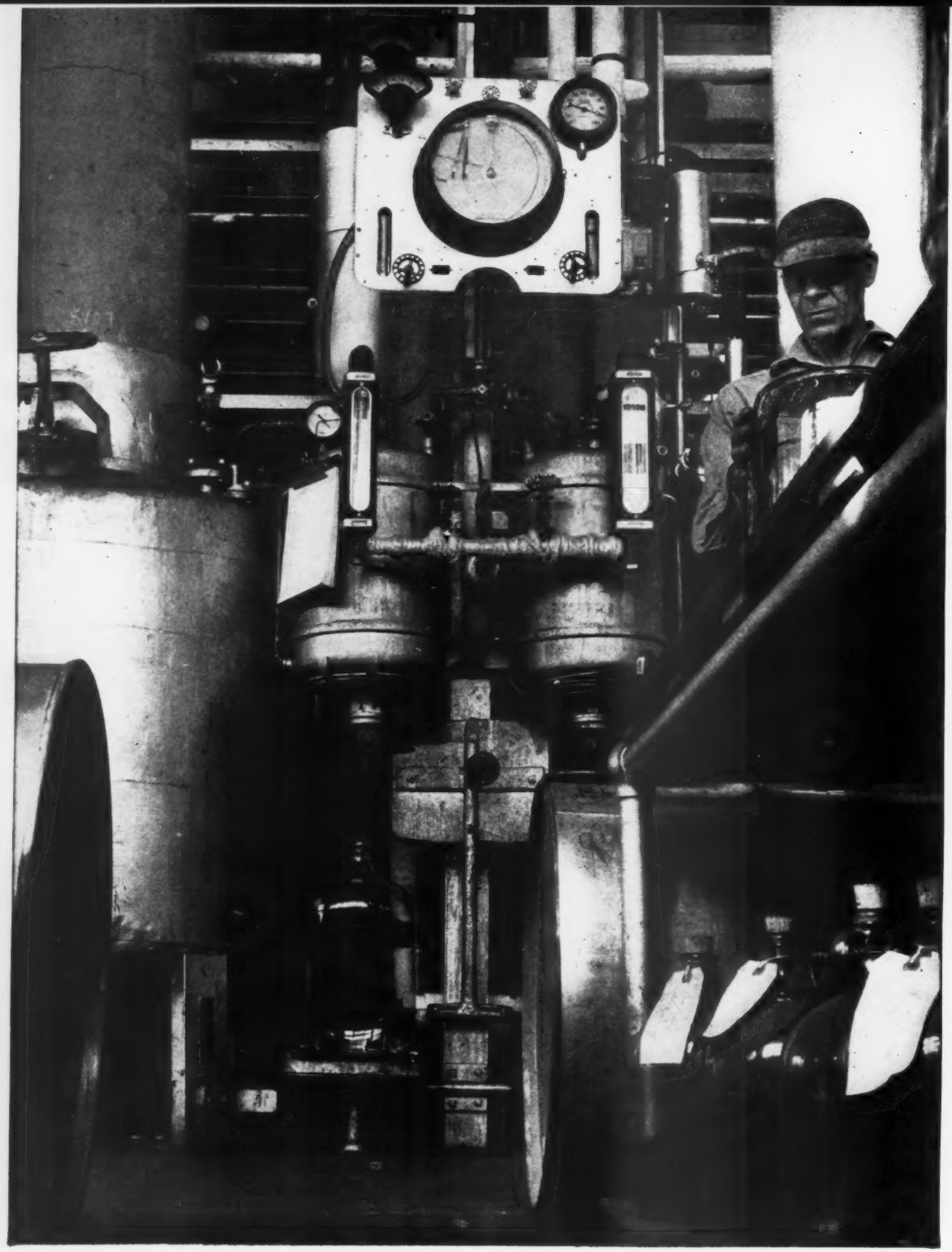

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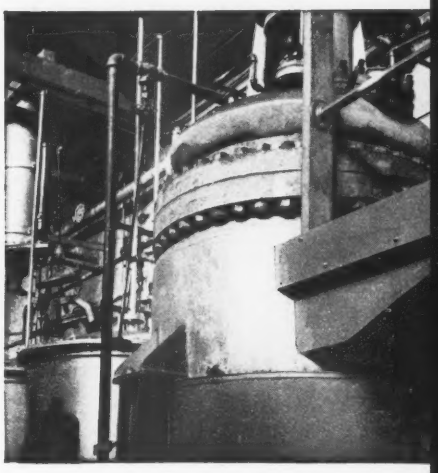

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DRUG AND COSMETIC OPERATIONS 1958

BY JOSEPH KALISH, PH.D.

Total sales of companies listed in the Pharmaceutical tabulation came to somewhat more than $2 billion for 1958, about 5 per cent ahead of 1957. These sales represent a mixture of ethical and proprietary drug sales. Sales of companies included in the cosmetic list came to more than $500 million in 1958, about 9 per cent over 1957 sales.

Profit margins after taxes in the cosmetic industry were highest for Avon, 8.9 per cent, Revlon, 8.7 per cent, Shulton, 9.1 per cent, Beauty Counselors, 9.5 per cent. Pharmaceutical company margins were 13.2 per cent for Lilly, 16.2 per cent for Parke Davis, 13.7 per cent for Upjohn, 16.8 per cent for SKF, 16.6 per cent for Schering and 21.3 per cent for Searle.

PHARMACEUTICALS, COSMETICS, CHEMICALS, ETC.
(In Thousands of Dollars)

	1958				1957			
	Net Sales	Cost of Goods	Sell., Adm., Gen. Exp.	Net Income	Net Sales	Cost of Goods	Sell., Adm., Gen. Exp.	Net Income
PROCTER & GAMBLE CO. (JUNE 30)	1,295,163	829,111	317,047	73,197	1,156,390	741,094	277,039	67,807
OLIN MATHIESON CHEM. CORP.	601,398	421,346	109,258	9,383	592,877	397,737	98,320	36,377
COLGATE-PALMOLIVE CO.	534,047	289,766	200,595	21,166	506,910	283,797	182,738	19,930
AMERICAN CYANAMID CO.	525,076	271,668	136,352	43,841	532,479	267,662	132,329	51,348
LEVER BROTHERS CO.	382,600	—— 306,800 ——		10,100	345,600	—— 284,700 ——		5,900
AMERICAN HOME PRODUCTS CORP.	377,991	146,231	141,418	42,436	349,290	140,388	125,659	38,618
JOHNSON & JOHNSON	324,290	192,351	91,353	15,054	318,776	192,896	87,143	17,938
CHAS. PFIZER & CO., INC.	222,726	116,966	71,359	23,965	207,162	101,142	65,083	22,909
MERCK & CO., INC.	206,636	86,703	71,460	27,718	186,937	83,675	63,056	23,094
STERLING DRUG, INC.	197,790	73,921	87,306	19,149	184,080	67,726	78,594	17,837
GILLETTE CO.	193,865	58,727	80,304	27,565	194,929	——	——	25,941
REXALL DRUG CO.	182,371	108,531	58,440	6,305	167,567	100,163	55,206	4,614
WARNER-LAMBERT PHARM. CO.	176,958	61,538	76,652	15,034	174,730	62,315	74,739	14,964
BRISTOL-MYERS CO.	113,870	31,327	73,780	7,235	106,847	30,484	63,532	6,404
VICK CHEM. CO. (JUNE 30)	107,043	52,286	34,315	10,070	94,796	49,323	29,286	7,889
CARTER PRODUCTS (MARCH 31)	42,470	13,684	20,455	5,595	41,836	15,036	19,784	4,473
LEHN & FINK PROD. CORP. (JUNE 30)	30,464	—— 27,838 ——		1,080	27,321	—— 24,798 ——		1,243
CHEMWAY CORP.	7,772	2,671	4,347	345	6,695	2,543	3,856	118

Allied Laboratories, Inc. Net sales of all products declined by 14 per cent as a result of a decline in polio vaccine sales of 56 per cent along with an 11 per cent sales increase of products in the regular line. These figures correspond to polio vaccine sales of $13,240,000 in 1957 and $5,820,000 in 1958. The Campana Sales Company was acquired in July 1958 for 65,000 shares of Allied stock.

American Cyanamid Company. Research and process development expense was $23,357,000, compared with $22,695,000 in the preceding year. Capital expenditures were $85,566,969 in 1958. Sales for the first quarter of 1959 were $145,860,000, highest for any quarter in the company's history, and net earnings were 5 per cent ahead of those in the first quarter of 1958.

American Home Products Corp. Gross sales in 1958 were $402,134,000 divided among ethical drugs 46 per cent or $185,000,000, packaged drugs and cosmetics 21 per cent or $84,400,000, household products 17 per cent and foods 16 per cent.

Avon Products, Inc. 1958 sales were 20 per cent ahead of 1957 sales, net income 15 per cent greater than in 1957. The growth rate was maintained in 1959, when sales for the first quarter reached $25,884,000, up 19 per cent from 1958 first quarter sales. In these same periods, net earnings increased to $2,022,000 from $1,386,000, a rise of 45.9 per cent.

Baxter Laboratories, Inc. Sales in the first quarter of 1959 were 9.7 per cent greater than in the first quarter of 1958; net income was up 24.8 per cent.

Beauty Counselors, Inc. Net sales in the first quarter were $2,408,000 for 1959 compared with $1,946,000 in 1958; corresponding net income figures were $284,599 and $220,809.

Bristol-Myers Company acquired Grove Laboratories at the beginning of 1958 for 66,667 shares of stock plus $4,812,000 cash. Proprietary sales were $90,299,000 in 1958, $78,639,000 in 1957; ethical drug sales were $20,269,000 in 1958, $24,895,000 in 1957. Total research expense was over $5,000,000 25 per cent greater than in 1957.

Carter Products, Inc. Sales of advertised products were $19,358,000, 45.6 per cent of the total while sale of

PHARMACEUTICALS
(In Thousands of Dollars)

	1958				1957			
	Net Sales	Cost of Goods	Sell., Adm., Gen. Exp.	Net Income	Net Sales	Cost of Goods	Sell., Adm., Gen. Exp.	Net Income
AMERICAN HOME PRODUCTS CORP.	269,000	—	—	—	239,000	—	—	—
ELI LILLY AND COMPANY	180,471	—	132,755	— 23,675	199,801	—	133,448	— 32,297
PARKE, DAVIS & CO.	172,583	58,156	62,168	28,041	162,288	54,981	56,413	27,930
STERLING DRUG, INC.	167,784	—	—	—	158,305	—	—	—
UPJOHN COMPANY	146,136	39,365	64,366	20,043	128,083	36,673	56,207	17,359
SMITH KLINE & FRENCH LABS.	124,066	36,786	42,869	20,805	115,489	35,023	37,736	20,553
ABBOTT LABORATORIES	116,598	45,497	45,542	12,873	111,271	42,599	43,383	12,681
WARNER-LAMBERT PHARM. CO.	111,160	—	—	—	104,400	—	—	—
BRISTOL-MYERS COMPANY	110,568	—	—	—	105,535	—	—	—
OLIN MATHIESON CHEM. CORP.	108,252	—	—	—	104,939	—	—	—
VICK CHEMICAL CO. (JUNE 30)	87,200	—	—	—	—	—	—	—
SCHERING CORP.	75,180	16,363	38,837	12,454	80,692	16,580	36,950	15,365
CHAS. PFIZER & CO., INC.	74,613	—	—	—	71,467	—	—	—
MILES LABORATORIES	62,646	—	52,767	— 4,002	56,337	—	47,242	— 3,776
MEAD JOHNSON & CO.	57,435	24,093	23,810	4,696	51,567	21,378	20,864	4,865
NORWICH PHARMACAL CO.	37,152	9,303	18,380	4,346	33,478	8,642	16,160	3,942
G. D. SEARLE & CO.	32,667	9,803	8,560	6,972	30,597	8,502	7,756	6,923
PLOUGH, INC.	31,517	14,465	12,728	2,305	29,473	13,955	11,616	2,025
ALLIED LABORATORIES, INC.	30,707	13,676	12,753	2,077	35,651	13,707	13,084	3,853
BAXTER LABORATORIES, INC.	25,057	15,363	6,296	1,394	23,783	15,358	5,792	1,062
CUTTER LABORATORIES	18,745	10,142	7,061	785	17,053	9,295	6,338	642
U. S. VITAMIN & PHARM. CORP.	14,493	5,217	6,163	1,807	13,453	4,584	5,899	1,723
NOXEMA CHEM. CO.	11,787	—	9,604	— 909	9,956	—	8,596	— 636
STRONG COBB	6,707	5,966	989	131 loss	7,947	6,522	919	316
WM. H. RORER, INC.	6,617	1,671	3,153	831	4,736	1,234	2,401	514
LAKESIDE LABS., INC. (OCT. 31)	6,134	1,088	4,082	396	6,767	1,072	4,098	621

prescription pharmaceuticals and meprobamate powder were $23,111,400 or 54.4 per cent of total sales. Research expenses were $805,000.

Colgate-Palmolive Company household and toilet article sales in 1958 increased by 5 per cent. The Wildroot Company was acquired in February 1959 for 127,066 shares. Sales for the first quarter of 1959 were about 10 per cent ahead of the 1958 figure and net income was 13 per cent greater. The company has established a Drug Division for entry into the proprietary and ethical drug fields.

Coty, Inc. For the six months ending December 31, sales were $12,959,000 in 1958, $14,188,000 in 1957, while net income was $635,286 compared with $322,950.

The Gillette Company. The total home permanent wave market again declined in 1958; the hair spray market showed substantial growth during 1958.

Lakeside Laboratories, Inc. Research expense was $593,246 in 1958, $542,954 in 1957.

Lanolin Plus, Inc. For the six months ended December 31, 1958, a net profit of $664,806 was earned on sales of $4,251,602.

Lever Brothers Company figures cover only operations for the United States.

Eli Lilly and Company. Although sales declined by 10 per cent and income by 27 per cent, research and development expenses increased 19 per cent from $13,200,000 to $15,667,000. Polio vaccine sales declined 57 per cent from $29,800,000 to $12,800,000. Capital expenditures were $10,800,000 in 1958.

Mead Johnson & Company. 1958 capital expenditures were $3,753,000, foreign sales $10,093,000. Research expenses were $2,800,000 for 1958 with $3,300,000 budgeted for 1959.

Merck & Co. Fifty-four per cent of sales were in vitamins, diuretics and steroids. Research and development expense, 8 per cent of sales, totaled $17,100,000; capital investments increased to $16,700,000 from $13,600,000. International sales, 27 per cent of the total, amounted to $56,000,000. Merck Sharp Dohme has about 700 detail men.

Miles Laboratories, Inc. 1958 sales were divided among 84.7 per cent or $53,061,000 of home products, 10.1 per cent or $6,327,000 of pharmaceutical products, and 5.2 per cent or $3,258,000 of chemicals. Home products for 1958 included Alka-Seltzer sales of $37,838,000 and $12,091,000 of One-A-Day brand vitamins, compared with 1957 sales of these products of $36,450,000 and $8,732,000.

Norwich Pharmacal Company net income for the first quarter of 1959 reached $1,049,732 or 31 per cent greater than in the first quarter of 1958; record sales of $9,193,721 represented an increase of 15 per cent.

Olin Mathieson Chemical Corporation. Squibb sales are reported as 18.2 per cent of total consolidated world sales, but reported consolidated net sales are for the United States and Canada. Nonconsolidated foreign sales equalled $47.3 millions in 1958.

COSMETICS
(In Thousands of Dollars)

	1958				1957			
	Net Sales	Cost of Goods	Sell., Adm., Gen. Exp.	Net Income	Net Sales	Cost of Goods	Sell., Adm., Gen. Exp.	Net Income
AVON PRODUCTS, INC.	120,111	47,237	50,796	10,734	100,380	37,810	43,698	9,342
REVLON, INC.	110,363	44,598	46,180	9,688	95,175	36,460	39,863	8,999
CHESEBROUGH-PONDS, INC.	59,368	21,869	30,870	3,568	55,496	21,135	29,267	3,112
HELENE CURTIS (FEB. 28)	48,827	23,050	24,905	502	—	—	—	—
MAX FACTOR, INC.	45,071	—	39,291	2,802	44,327	—	39,538	2,329
SHULTON, INC.	37,280	—	30,505	3,403	33,301	—	26,581	3,313
HELENA RUBINSTEIN, INC. (JUNE 30)	25,139	—	23,193	911	22,830	—	20,469	1,192
WARNER-LAMBERT PHARM. CO.	25,100	—	—	—	31,300	—	—	—
COTY, INC. (JUNE 30)	22,009	10,427	12,340	782 loss	24,794	11,957	14,954	1,071 loss
HAZEL BISHOP, INC. (OCT. 31)	9,227	4,005	5,784	353 loss	10,006	3,539	7,378	996 loss
BEAUTY COUNSELORS	8,374	2,580	3,967	794	6,981	—	—	621
LANOLIN PLUS, INC. (JUNE 30)	7,470	3,094	4,725	900 loss	—	—	—	—
VICK CHEMICAL CO. (JUNE 30)	6,400	—	—	—	6,400	—	—	—
CAMPANA	4,972	—	—	427	4,355	—	—	241
BOURJOIS, INC. (APRIL 30)	—	—	2,941	422	—	—	2,977	541

Parke, Davis & Company is in the second year of its $55,000,000 expansion program. Research and product development expenses were $8,387,000 in 1958 compared with $6,585,000 in 1957. Chloromycetin sales for 1958 were about $62,000,000.

Chas. Pfizer & Co., Inc. has 750 detail men and in 1958 spent $11,000,000 on research and $28,000,000 for capital investment. Of the total sales, international operations accounted for 39 per cent or $86,900,000; Pfizer Laboratories were 27 per cent or $60,100,000; Roerig sales were 6.5 per cent or $14,500,000, agricultural sales were 7.5 per cent and chemical sales were 20 per cent.

Plough, Inc. In 1958, Solarcaine, a remedy for sunburn and other burns, and Creolin, a household disinfectant were purchased for cash. Coppertone, acquired in 1957, was taken over by the Plough sales force in 1958 and has become the largest selling suntan line.

Revlon, Inc. Sales were up 16 per cent, net income 7.6 per cent. A 20 per cent interest in Schick, Inc. was acquired in November 1958 and a substantial investment in Schering Corp. is being maintained. Knomark shoe polish sales increased during the year. About 100 persons are employed in the research division.

Schering Corporation research expenditures during the year totaled $6,403,000, a 22 per cent increase over 1957, personnel increased by 25 per cent to almost 450. More than 30 per cent of the budget is being spent on steroid research. Domestic ethical sales, 69 per cent of the total or $51,900,000, declined by 10 per cent, domestic proprietaries or 8 per cent of the total declined 4 per cent, Foreign sales, 21 per cent of the total, increased by two per cent while veterinary sales, 2 per cent of the total, increased by 24 per cent. With the termination of the domestic licenses on prednisone and prednisolone, royalty income was 18 per cent lower. Capital expense was $5,273,000 in 1958. The company estimates that the total corticoid market was $93 million in 1958, $88 million in 1957, the prednisolone group declining from $58 million to $43 million, while methylprednisolone, triamcinolone and dexamethasone sales attained a value of $20 million.

G. D. Searle & Co. acquired Root Chemicals, Inc. for 38,790 shares of Searle stock. Research expenses in 1958 were 10 per cent greater than in 1957 and the 1959 budget is running 20 per cent greater than in 1958. The company's oral diuretics declined sharply in sales because of competition from new products. For the first quarter of 1959, sales were $8,036,347, compared with $7,591,677 in 1958 while net income was $1,717,265 and $1,716,148.

Shulton, Inc. sales increased 12 per cent, income by 3 per cent. Capital expense for the year was $1,287,000.

Smith Kline & French Laboratories has 420 U. S. detail men; research and development expense increased by 14 per cent to $10,750,000 in 1958. For the first quarter of 1959, compared with the same period in 1958, sales increased 5.8 per cent to $32,443,000, net income increased 27 per cent to $6,088,000.

Sterling Drug, Inc. Total net sales for 1958 were $215,844,000, including $96,807,000 of proprietaries sale and $70,977,000 ethicals, compared with $91,636,000 and $66,669,000 as part of the $203,478,000 total in 1957. Capital expenditures were $7,388,000, compared with $6,508,000 in the preceding year.

Upjohn Company stock was sold publicly on December 11, 1958 and listed on the New York Stock Exchange January 5, 1959. Capital expenses were $9,763,000 in 1958, research and development expense increased from $11,623,000 to $12,951,000 and steroid production in 1958 was almost double that in 1957. In the first quarter of 1959, compared with the 1958 figures, sales were $36,783,000, an increase of 6 per cent, and net income declined to $5,050,000, from $5,152,000.

WILLIAM B. GRAHAM

AUSTIN SMITH

PMA MEETING

As anticipated, the Pharmaceutical Manufacturers Association changed its organizational set-up to provide for a full-time paid president to act as its spokesman and administrative head. The amendment to the association by-laws which was necessary to bring about this change was adopted at the annual meeting held last month (April 1 to 3) at Boca Raton, Florida. The new president of the association is Dr. Austin Smith, 46-year-old former editor of the *Journal of the American Medical Association.*

Two new officers in the association—chairman of the board and chairman-elect—were created to make room for the president. Former president-elect, William B. Graham, president of Baxter Laboratories, was named chairman, and Harry J. Loynd, president of Parke, Davis & Company, was elected chairman-elect.

It will be Dr. Smith's duty to carry out the policies set by the PMA board of directors. Dr. Smith is not a member of this board, but he will attend all meetings. Reporting directly to Dr. Smith will be Dr. Karl Bambach, executive vice-president of the association, and Dr. J. O'Neill Closs, administrative vice-president. The scope of their duties is to be determined by Dr. Smith.

Dr. Smith told the association that the drug industry has an important job in impressing others with the benefits of the free enterprise system. He said:

"Any industry, any individual, in this country is entitled to profits. If these are not forthcoming, the employees and stockholders, as well as the officers, can rightly feel that they are being short-changed.

"And each member of an industry should have the right to do business in its own way within the framework of existing laws and moral obligations.

"Unfortunately at times, laws and interpretations of laws are made not following the application of Solomon-like wisdom, but because an element of personal ambition or resentment or bias or something equally unsound has been the motivating influence.

"Such situations are not always hopeless; often they are correctible. So far as the drug industry is concerned, it should be particularly mindful of these problems because it can cite persuasively that its main concern is the welfare of the sick."

Pointing out that in order to do a good public relations job, the drug industry must be well informed, Dr. Smith said:

"It must know what is transpiring in its own field, within the ranks of the health professions, in government circles, in other business areas, in fact, even in public affairs. The industry must be informed, it must be able to interpret the significance of such information, and it must be prepared to activate whatever programs seem appropriate."

Calling for united effort on the part of the entire industry, Dr. Smith said:

"The drug industry is so big, so subject to rapid change, and so exposed to the barbs of political opportunists and to critics of free enterprise, it must act as a united industry and its members must, in addition, participate as individuals.

(*Continued on page 667*)

LIPSTICK COLORS UNDER ATTACK

On April 14th, the Food and Drug Administration announced that it was preparing to order the delisting of 17 D&C red, orange and yellow certified dyes, including a number of vitally important lipstick colors. This follows on the heels of the order which removes four yellows from the FD&C list and now permits their use only in drugs and cosmetics for external application.

The D&C Oranges No. 5, 6 and 7 are dibromofluorescein and its sodium and potassium salt; D&C Orange No. 17, dinitraniline orange; D&C Yellows No. 7, 8 and 9 or fluorescein and its sodium and potassium salts; D&C Red No. 8 and 9, Lake Red C sodium salt and the barium toner of Lake Red C; D&C Red No. 10, 11, 12 and 13, Lithol Red sodium salt and the calcium, barium and strontium toners; D&C Red 19, 20 and 37, Rhodamine B and its acetate and stearate salts; D&C Red No. 33, Acid Fuchsin D. The previously delisted FD&C yellows are the sodium salt of naphthol yellow S, Yellow No. 1; the corresponding potassium salt, Yellow No. 2; Oil Yellow AB, Yellow No. 3; and Oil Yellow OB, Yellow No. 4.

According to Dr. Samuel Zuckerman, vice-president of H. Kohnstamm & Co., Inc., seven of these D&C colors are bright and brilliant reds, leaving only three comparably bright ones for lipstick use. D&C Orange No. 5 is an orange-toned bromo acid; two other staining colors remain, but these are both bluish red. Certainly, lipstick manufacturers will be hamstrung if they must be limited to a small selection of bright dyes to liven the dull ones still permitted; the large export trade will suffer heavily from the competition of unrestricted foreign manufacturers.

What are the immediate consequences of the ruling? During the 30 days following the announcement, interested parties may submit their objections to the Food and Drug Administration order; after due consideration, the Administration may call for open hearings and then may or may not decide for delisting. Delisting, if ordered, would take effect 90 days after the order.

Since the use of these and other certified colors has been permitted for 20 years, what has caused this belated activity? The furor seems to have had its origin in 1951, when a candy manufacturer used relatively enormous quantities of a certified dye in a confection which then caused digestive disturbances in a number of children. Examination of the Federal Food, Drug and Cosmetic Act of 1938 and the accompanying Coal-Tar Color Regulations revealed that the food, drug and cosmetic sections each called for "the listing of coal-tar colors which are harmless *and* suitable for use . . ." and the regulations also mention "harmless" without qualification. The unabridged Webster's New International Dictionary defines the word "harmless" as "free from power or disposition to harm." The Supreme Court ruled that the Food and Drug Administration had no authority under the law to deviate from this definition and to set tolerances.

According to Dr. Arnold J. Lehman, director of the Division of Pharmacology of the Food and Drug Administration, rats fed large amounts of the certified dyes for 90 days in some instances revealed damage to the liver, kidneys, spleen and blood-forming system. He made it clear that no known damage to human beings had been attributed to the use of colors in lipsticks, but the Food and Drug Administration is adhering to the letter of the law in moving for delisting. The Administration proposes to forbid the use of batches of these colors which have already been certified. "We had no choice," Dr. Lehman said. "Either we initiated proceedings to ban these colors, or we would be violating the law ourselves." John L. Harvey, deputy commissioner of food and drugs, said that no reports had been received of injury to users of lipsticks made with coal-tar colors to be delisted, and pointed out that the amounts of these colors taken into the digestive system from lipstick use are smaller than those fed to animals in safety tests.

The Food and Drug Administration agrees with lipstick manufacturers that the law is unrealistic and should be amended to define limits within which the use of the colors will be safe for human use. W. B. Rankin, assistant commissioner of the Food and Drug Administration has stated: "There is a prospect of gradual removal of colors from the permitted list, with no indication that adequate substitutes will be developed which are suitable for acceptance on the list. On the contrary, there is every reason to believe

(*Continued on page 666*)

THE POTENTIAL OF PHARMACEUTICAL AEROSOLS*

BY SAMUEL B. PRUSSIN
VICE-PRESIDENT, AEROSOL TECHNIQUES, INC.

The modern aerosol concept for the application of medicinals is generally accepted as a dispensing means from pressurized containers using either liquefied propellents such as fluorohydrocarbons, or inert gas propellents such as nitrogen and argon. The various fields of endeavor relating to the aerosols in the ethical field which have achieved success as commercial products or which are being subjected to intensive research are: inhalation aerosols, aerosol units for treatment via the oral route, topical aerosols, and aerosols for vaginal, dental and rectal use.

Research and development for inhalation, topical and dental work have culminated successfully in aerosols acceptable to, and accepted by, the medical and dental professions. Among these products are Riker's Medihaler units, Winthrop's Isuprel, Schering's Metiderm, Lederle's Achromycin and Rhulispray, Pfizer's Acnecare, Dome's Quatrasal, Tailby-Nason's Betadine and Abbott's Tronothane. Abbott's Vidaylin and Roerig's Viterra pediatric multivitamin products are samples of pressure packages which appear to be gaining a toe hold among aerosols administered via the oral route. Considerable research, formulation and packaging engineering are being accomplished to develop effective and convenient aerosols for vaginal use. Feeble attempts have been made to exploit the aerosol rectal market.

This paper will deal for the most part with aerosols designed for inhalation therapy, for the following reasons: (1) aerosols for inhalation have achieved the first practical success in the ethical field and are, therefore, of historic value; (2) their exciting and still virtually untapped potential; and (3) the commercial and humanitarian aspects in the treatment of disease by administering certain drugs *directly* to any level

of the respiratory tract for immediate or sustained action, detouring the gastrointestinal and parenteral routes.

General Considerations

Administration of medicinals in the form of aerosols is a relatively old therapeutic application. Utilization of the pulmonary route for the administration of therapeutic agents dates back to the use of steam inhalation, which has been described in ancient medical records. Other methods include the vacuum cleaners, bicycle pumps, "mile high" or compressed gas cylinders, basketball bladders and intermittent positive pressure breathing apparatus.

Inhalation has been used with steam alone, with steam charged with drug vapors or with drugs finely subdivided. The radius of particles produced by steam inhalation is seldom less than 30 microns. Particles

*Abstracted from a paper presented at the Canadian Pharmaceutical Association, Windsor, Ontario, April 1959.

of this size do not penetrate further than the trachea; therefore, steam inhalation is seldom of value in cases of asthma and is used chiefly for relieving the first stages of laryngitis or bronchitis. When a mist is produced with particles that have a radius of 10 to 30 microns, the process is called atomization. Particles of this size are able to reach the bronchioles but, if one wishes the medicament to reach the alveolar sacs, the particles must be even smaller; that is, they must have a radius of 3 to 10 microns. The fundamental principles in the operation of most nebulizers is based on the Venturi principle whereby a jet or stream of gas passes across the top of a vertical tube, usually of a capillary diameter, immersed in a medicament solution. The differential in pressure causes the liquid in the tube to rise and be carried away in the direction of the gas stream. To obtain smaller particle sizes by the above process, baffles are usually introduced, against which the particles impinge for subdivision. The same effect on a more controlled basis is being obtained by aerosols wherein the propellent provides the dispersion force, and acts also as a medium in which a medicament is dissolved or suspended.

Aerosol therapy in which the medicament is administered as nebulized particles is a product of the Twentieth Century, and it has been subjected to extensive and meticulous investigation in recent years. Since aerosol therapy allows application of medical agents directly to the organ in need of treatment, it represents a simple method for the self-administration of certain drugs to the lungs without resorting to expensive or painful procedures. It, therefore, has been widely used in the treatment of respiratory diseases. These diseases frequently are associated with excessive and tenacious accumulations of mucus within the bronchial tree. The patients are unable to expel these secretions as a result of overstimulation and weakening of the cough reflex. These retained secretions may lead to complications such as collapse of the lung segments and infection. In the presence of these complications, oral or parenteral therapy is relatively ineffective and direct attack by aerosol therapy is indicated. Bronchodilating agents are particularly suited for this type of therapy, and aerosols of the proved sympathomimetic drugs, epinephrine and isoproterenol hydrochloride, are routinely used for the relief of bronchospasm and to promote expectoration in cases of bronchial asthma and chronic emphysema.

Asthma

The word asthma is derived from the Greek, meaning panting.[1] Addition of bronchial gives the inference that the bronchi have something to do with the panting. Through the centuries since Aretaeus' original description, a certain definition for bronchial asthma has evolved, namely, a disease or symptom complex marked by attacks, paroxysmal or constant, with symptoms of dyspnea, wheezing, cough and a sense of constriction within the thoracic cavity.

Clinical Evaluation

1. *Epinephrine bitartrate and isoproterenol hydrochloride.* In 1947, Segal and Beakey[2] published the first United States studies on the use of isoproterenol in the therapy of bronchial asthma. These and further observations have since been confirmed by other investigators. A summary of the work indicates that an alcoholic solution of isoproterenol dispensed via aerosol form is a safe, convenient, economical and effective method of administering the potent bronchodilating agent, isoproterenol, in the therapy of bronchial asthma. The authors further conclude that:

(a) The mixture of fluorohydrocarbon propellents is considered nontoxic.

(b) A single measured dose of the alcoholic isoproterenol solution yields an adequate concentration of the active drug in the range of effective therapeutic particle size.

(c) All 13 patients studied by the measurements of serial vital capacities demonstrated a rise in their vital capacities following one to two inhalations with the isoproterenol unit ranging from 10 to 36 per cent. These elevations in vital capacities were most marked in the group with 3+ wheezing. A further increase in vital capacities occurred in eight of the 13 patients subsequent to either six inhalations or 1 cc. of continuous aerosols of isoproterenol.

(d) The study of the mechanics of breathing before and after therapy with the isoproterenol alcoholic unit in two patients with chronic bronchial asthma and in one patient with minimal evidence of bronchospasm indicates improvement following its use. The mechanics of breathing was improved in these three patients.

Freedman[3] studied the following two medicaments in aerosol form for bronchial asthma: epinephrine bitartrate as an 0.5 per cent aerosol solution in an inert propellent with a maximal inspiration of 0.125 mg. of epinephrine delivered from the orifice of the adapter and isoproterenol hydrochloride as an 0.25 per cent solution in an inert propellent with a maximal inspiration of 0.6 mg. of isoproterenol hydrochloride delivered from the orifice of the adapter. The author's comments indicate that in keeping with the basic principle of utilizing the simplest type of therapy that will produce symptomatic relief with the least amount of medication, the aerosols tested have

(*Continued on page 672*)

CLINICAL ENZYMES

BY BERNARD IDSON, PH.D. RESEARCH DIRECTOR, JULIUS SCHMID, INC.

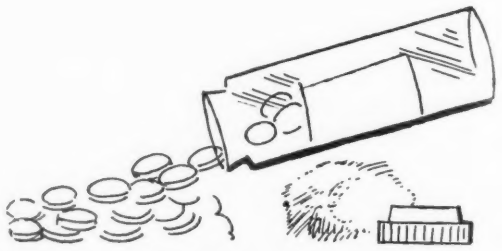
Use of enzymes in medical practice is increasing as understanding of metabolic derangements and the need for restoring normal enzymatic systems increases. Proteolytic enzymes comprise the bulk of these therapeutic acids, and have earned the name "biological scalpels." The list is widening as crystalline enzymes become available for more specific nonprotein substrates. A few years back the bulk of enzymes was used in composition formulations, with pepsin and pancreatin as digestive acids. While the prescription volume for these preparations was and is considerable, the demand is as great for the bile salts, liver concentrates, vitamins, desoxycholic acid and the like included in the formulations. Today relatively pure enzymes such as trypsin, chymotrypsin, streptokinase, hyaluronidase and others are used singly for a large variety of disorders. They alone net manufacturers close to two million dollars in sales. About two-thirds of these sales are to hospitals. The curve of sales has been constantly on the increase.

Clinical use of enzymes is certainly not a new procedure. As noted, their use in digestive aids is quite old. Plant brews or infusions were often applied to purulent wounds, anticipating present treatment. That highly successful, if esthetically undesirable method of cleansing foul wounds, the maggot, apparently depended upon the production of proteolytic enzymes, tryptases, collagenases and other enzymes of the insect.

Enzymes manufacturing is a specialty industry. Only a handful of companies around the country are involved. These include Rohm & Haas, Takamine, Wallerstein, Paul-Lewis Laboratories, Armour, Wilson, Jacques Wolf, S. B. Penick, Fermco, Schwarz Laboratories and other smaller companies. Some of these deal almost exclusively in enzymes, others have extensive product lines in other areas. Pharmaceuticals still constitute a relatively small percentage of the total use of enzymes.

Enzymes now in clinically useful stages of development in a relatively pure form include trypsin, chymotrypsin, streptokinase - streptodornase, pacreatic dornase, papain, pepsin, hyaluronidase and penicillinase. Those in the developmental stage are plasminogen, serum profibrinolysin and several collagenase-containing preparations and bromelin.

Trypsin is perhaps the most famous of the pancreatic enzymes catalyzing the hydrolysis of proteins in the intestinal tract, and the leader both in clinical use and sales. The proteolytic action and the fact



that it attacked nonviable tissue selectively, suggested to early investigators that it might be useful in diseases characterized by extensive tissue breakdown. Initial clinical work used this proteolytic action on necrotic tissue and exudates. Distinct advantages are that a known amount of enzyme is used, and it will digest necrotic tissue and proteins other than fibrin, which may be present in the wound.

Largest sales volume in the trypsin group of clinical enzymes is enjoyed by Tryptar (Armour), a purified crystalline trypsin from mammalian pancreas. Depending on the type of necrotic lesion, Tryptar is used either as a powder, a solution or an ointment. Tryptar Antibiotic Ointment is the individual biggest seller. Tryptar Ointment is a combination of trypsin, chymotrypsin and the antibiotics polymyxin and bacitracin, finding its main use for skin lesions with protein debris, which are often considerably resistant to antibiotic therapy. These lesions lend themselves to the combined proteolytic and antibacterial action. Two to four days of treatment usually cleans the wound and permits natural healing and epithelization. Tryptar solution is supplied for intrapleural use. On infiltration there may be a histaminelike effect which is controllable by antihistamines.

Injectable preparations of trypsin are a comparatively recent form of therapy restricted to the intramuscular route. The chief parenteral preparation is Parenzyme (National Drug), supplied both in oil and aqueous medium. Aqueous Parenzyme is supplied as a sterile multiple dose vial containing 25 mg. trypsin plus a 5 ml. vial of aqueous diluent. After reconstitution, the solution is stable for three months at from 2 to 10° C. The Parenzyme in oil is in 5 mg. multiple dose vials. The aqueous preparation of trypsin often appears to yield better clinical results than that in oil. The clinical changes are actually the same; the difference is in rapidity of response. Use of an aqueous solution of trypsin in 5 per cent gelatin appeared to eliminate most side effects, producing less pain on injection. Parenzyme is claimed to have a wide margin of safety. However, caution

is urged in patients with defects in the blood clotting mechanism. Fear of systemic reactions from impure preparations slowed clinical work on parenteral proteases. Availability of purer enzymes has considerably modified the situation, as actions become predictable.

Mechanistically, current medical belief is that in inflammatory and edematous processes, fibrin macromolecules are trapped in the fine mesh of the capillaries and in connective tissues. These fibrin deposits block the free flow of body fluids. Trypsin, administered intramuscularly, apparently decreases the size of these fibrin molecules by depolymerization. The free flow of blood and other body fluids is restored and tissue repair is accelerated. Maximal absorption of trypsin from an intramuscular site occurs in approximately 24 hours. These beneficial effects of trypsin are not believed to be due to its own proteolytic action, but to the activation of the conversion of profibrinolysin to fibrinolysin. The action of trypsin on edema is very incompletely understood, which is hardly surprising, for the medium in which parenteral trypsin acts is composed of a mixture of protein materials including inactive substrates, proteases, proenzymes and inhibitors.

Research and clinical empiricism have indicated the therapeutic efficacy of trypsin in thrombophlebitis. This action is believed to be due primarily to the anti-inflammatory effect of the enzyme. Clinical research, therefore, was aimed at the examination of trypsin as an anti-inflammatory agent, in conditions associated with acute inflammation or vascular malfunction, but not necessarily with clot formation. Results have been sufficiently good that many skeptics are now trying Parenzyme in inflammatory conditions.

The action of intramuscularly administered trypsin has been investigated in a variety of respiratory conditions including empyema (pus in pleural cavities), lung abscess, bronchiectasis (dilation of walls of bronchi), infected bronchopleural fistula and bronchial asthma. Good results were reported in all these conditions. There is agreement that the enzyme causes a loosening of thick tenacious mucus, permitting freer coughing and easier raising of the fluid exudate. As a result there is a subsequent reduction in frequency of cough, breathing is facilitated and ventilation improved.

Ranking next to trypsin in both clinical effectiveness and sales volume are the combined streptococcal enzymes, streptokinase and streptodornase, marketed by Lederle as Varidase. The clinical indications are somewhat similar to trypsin, but actually each has certain extra effectiveness in differing fields.

Streptokinase (SD) activates fibrinolysis, causing dissolution of fibrous exudates and blood clots. The second enzymatic substance, streptodornase, is a ribonuclease that catalyzes the hydrolysis of desoxyribonucleoprotein and desoxyribonucleic acid, which constitute 30 to 70 per cent of the sediment of thick purulent exudates. The nucleoprotein is hydrolyzed to free purine bases and pyrimidine nucleosides, thereby effecting a reduction of the viscosity of the purulent material. It does not act on the nuclei or nucleoprotein of living cells, attacking only degenerating cells. Streptodornase effects lysis of thick purulent material to a thin fluid within minutes.

The two enzymes are dissimilar in every respect. Both their production and their probable mode of action are entirely independent of each other, even though they are produced simultaneously by the same organism. However, they do have one common denominator that is of considerable interest. Fibrin, which SK attacks, and desoxyribonucleoprotein (DNA protein), which SD attacks, both belong to the same chemical group of substances known as fibrous proteins. SK does not act directly on fibrin or fibrinolysin, but rather activates the reaction of plasminogen in blood serum to form plasmin, the active proteolytic enzyme responsible for fibrinolysis.

Clinically, SK-SD, or Varidase, has been shown to be effective in a variety of inflammatory and edematous conditions. The chief use has been for infections such as thrombophlebitis and cellulitis to remove clotted blood or pus accumulations occurring after trauma or inflammation, thereby facilitating normal repair of tissues. SK actually often accelerates the recovery period in acute inflammations. Edema fluid present in such lesions usually contains a high amount of fibrin, "walling off" the inflammatory process. At the same time this so-called limiting membrane may prevent therapeutic agents from gaining access to the area and exerting their effects. SK-SD, although not displaying any action on normal tissues, appears to lyse this fibrin. Upon removal of this barrier, the chemotherapeutic agents are capable of reaching the site of the infection. The so-called defense curtain in many instances does not protect the tissues from pathogenic bacteria, but does protect the bacteria from the antibacterial defenses of the body or administered drugs. By using these lytic enzymes intramuscularly these limiting membranes could be penetrated and antibiotics administered concomitantly.

Varidase is available in four dosage forms. For in-

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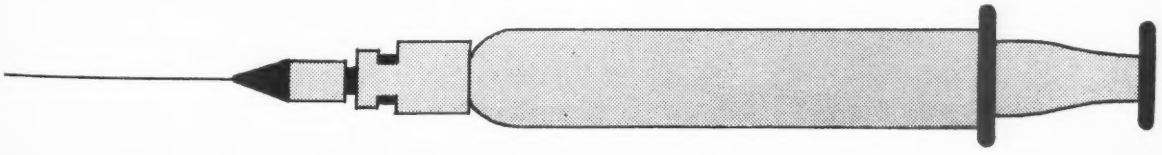
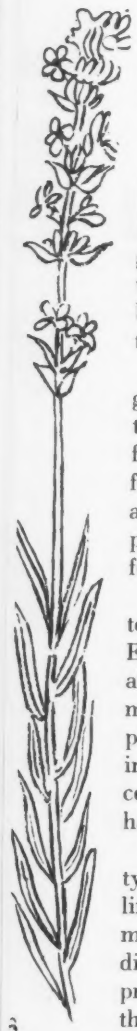


Perfume Formulation

THE LAVENDER-FOUGERE-CHYPRE GROUP

BY J. R. ELLIOTT PERFUME CONSULTANT



Lavender, fougere and chypre are classified together because of their interlocking fragrance relationship. No clear line of demarcation can be drawn between them. For convenience they will be referred to as the LFC group.

Theoretically, lavender is the "parent" of this group. By suitably modifying a lavender composition with bergamot and traces of oak moss, it is transformed into fougere. Then, by further modifying this fougere with heavy notes (vetyvert, sandalwood, etc.) and sweet powdery components (vanillin, heliotropine, coumarin, the artificial musks) it may be transformed into a chypre type.

Although this consecutive transformation appears to be simple, in actual practice it is quite complex. Each member of this LFC group can be subjected to almost unlimited variations within themselves, which makes for an almost infinite number of fragrance possibilities within the group. It is also of the greatest importance to the perfumer, since a very high percentage of the commercially successful fragrances have their origin in it.

In the subsequent discussion only the fundamental type formulas can be touched upon because of spatial limitations. The endless variations and elaborations must be developed by the artistic talent of the individual. Since *any* of the floral groups discussed in previous articles can be used to modify *any* of the three subdivisions of the LFC group, a tremendous range of artistic expression is available.

Rose, jasmin and lilac are the conventional florals used for modification in the LFC group, but the perfumer should not limit himself to them. The best advice for working in this LFC group is to experiment freely without prejudice or preconceived ideas.

LAVENDER

The lavender fragrance has a clear, refreshing, spicy-herby-camphoraceous effect. It resembles clover and new mown hay, and is used in the design of these compositions for that reason.

Four essential oils with a lavender fragrance are lavender absolute, lavender oil, lavendin oil, and lavender spike (aspic) oil.

Lavender absolute is a dark green, viscous oil, made by solvent extraction of selected lavender herbs. It possesses an exquisite lavender fragrance, sweet and fresh and more flowery than any of the other lavender products. The absolute is the most costly of the lavender materials and is used for the finest perfume effects.

Next in order of artistic importance is lavender oil, which constitutes the greatest bulk of the production of lavender products. It is obtained from the herb by steam distillation. The quality varies according to the district of origin and the technique of distillation. The desirability of lavender oil is rated by its ester (linalyl acetate) content; thus lavender 40/42 would be considered a high-grade oil. It is widely used in all kinds of fragrances, particularly colognes and soaps.

Third in line is lavendin oil, an essential oil distilled by steam from a lesser species of lavender herb. It is usually cheaper than lavender oil, but does not have as fine an odor, since it is more grassy and coarse. It is used considerably as a cheaper version of lavender oil in such products as soaps and cheap colognes, where fineness is not needed and cost is important.

The last of the major lavender products is the spike oil, steam distilled from a still lower species of a lavender-like herb. It has a very coarse, somewhat minty odor, and is largely used for cheap soap work.

Lavender concrete, an intermediate in the production of lavender absolute, is also available. The natural waxes contained in it contribute valuable fixation; concrete is used with lavender products only, as a fixative. The use of concrete is limited by the insolubility of these same waxes in alcohol. Only moderate quantities can be used in extract and cologne work, as there is a decided tendency for the waxes to cloud out of the alcoholic solutions even after the conventional freezing procedure.

The lavender products, with the exception of the absolute, can be subjected to acetylation with acetic anhydride. This procedure increases the ester content by acetylating the linalool present. The resultant effect has found some favor. Usually, however, this acetylation operation is used on the lower qualities in order to try and upgrade them.

Lavender products are very easily adulterated, since each one may be adulterated by those below it in quality and price. Then, at any point, any of these products may be further "trimmed" with cheap linalyl (or shiu) acetate, or even with terpinyl acetate, which is the very rock bottom for cheapness.

Faced with this complex opportunity for adulteration, the perfumer is strongly advised to shun any price bargins in lavender products and do business only with essential houses of established repute. Lavender adulterations are not easy to detect in the oil used, but show up later as a depreciation of the final product.

The fragrance of the lavender herb in its natural state is not attractive like other flowers; it is peculiarly musty and camphoraceous. When the layman smells the herb for the first time he usually describes it as "medicinal" or "hay-like."

Therefore there is no objectve in striving to achieve a high degree of accuracy in a lavender fragrance, as is the case with other flowers. Instead, the perfumer builds a sweet, fancy floral effect around a substantial quantity of a lavender product. Often considerable citrus notes are added to lighten the odor and give a cologne-like touch. The various "lavender" fragrances appearing on the market are out-an-out fantasies with only nominal resemblance to the true native lavender herb.

The lavender fragrance plays a highly important part in the creation of fantasy-type men's colognes, lotions, soaps, shaving creams and accessories. And, of course, it finds an extensive but more subtle use in colognes and fantasies for women.

Unfortunately, at present, lavender is beginning to suffer the fate of lilac and pine as a "solo" fragrance. Cheap lavender-like effects based on terpinyl acetate and various distillation residues of nominal cost are readily made, and are finding wide and increasing use as industrial "masks." Thus, the public's appreciation of the fine lavender fragrance is being debased by these shabby imitations, just as was the case with lilac and pine.

Following are the purpose classifications of the various lavender components.

Basics. Lavender absolute, concrete oil, lavendin oil, lavender spike oil.

Blenders. Linalyl acetate, linalyl propionate, linalyl isobutyrate, "Lignyl" acetate (Shulton Fine Chemicals), "Nopyl" acetate (Dow Chemical), linalool, geraniol, geranyl acetate, citronellyl acetate, citronellol, dimethyl octanol, dimethyl octanyl acetate, benzyl dimethyl carbinol, phenylethyl alcohol, hydratropyl alcohol, terpinyl acetate and propionate.

Adjuvants. Alpha ionone, methyl ionone, dimethyl ionone, citral, cyclocitral, hydroxycitronellal—methyl anthranilate Schiff's base, bergamot oil, lemon oil, mandarin oil, orange oil (sweet and bitter), clary sage, melisse oil, petitgrain, oak moss, ylang Bourbon, peppermint oil, patchouli, styrax oil, vetyvert oil, vetyvert acetate, coumarin, melilotin.

To this partial list of adjuvants may be added such compositions as rose, carnation, sweet pea, heliotrope, amber, tobacco, rose otto, hyacinth.

Fixatives. Lavender concrete, benzyl isoeugenol, vanillin, musk tincture natural, benzyl salicylate, musk ambrette, musk ketone, musk xylol.

Naturals. Neroli, orange flower absolute. Rose and jasmin absolutes are exquisite to use but, since lavenders are rarely made in a price range sufficient to perimt their use, they are not common.

The following is a fancy lavender-type bouquet which may be varied in almost endless ways.

	LAVENDER BLOSSOMS E.047
10	Ylang Bourbon
10	Oil peppermint Hotchkiss
15	Oil petitgrain South American
15	Dimethyl hydroquinone
15	Coumarin
25	Geranyl acetate
25	Phenylethyl alcohol
25	Cinnamic alcohol
25	Ethyl decylate
25	"Tepyl" acetate
25	Musk xylol
25	Oil geranium African
25	Isobornyl propionate
50	Bois de rose Brazilian
50	Citronellol
50	Lavender absolute
75	Linalyl acetate
75	Oil bergamot natural
35	Oil lemon Italian
200	Oil lavender 40/42
200	Benzyl salicylate
1,000	

In this composition the basic lavender effect is created with 16 and 20. The blending is accomplished with 6, 14 and 17. Cologne notes are provided with 3, 18 and 19. One and 10 give a jasmin adjuvance. Seven, 12, 9 and 15 produce the rose adjuvance. Sweetness and fixation come from 4, 5, 8 and 11. Additional freshness comes from 2 and 13. Final fixation is made with 21.

"Lavender Blossoms E.047" can be used for soaps, lotions and colognes, and also serves as a useful specialty-type base in the preparation of fancy fragrances. By substantially increasing the bergamot content and adding a small quantity of oak moss, it may be shifted into the fougere class.

The following illustrates another lavender type, a composition simulating a famous lavender used for toilet waters.

	LAVENDER FOR TW E.048
300	Lavender 40/42
100	Lavendin
100	Lavender spike
100	French rosemary oil
50	Oil red thyme
40	Oak moss resin
100	Terpinyl acetate
50	Terpinyl propionate
70	Linalool ex bois de rose
40	Styrax resin
10	Labdanum resin
20	Oil patchouli
30	Musk ambrette
50	"Lignyl" acetate
5	Methyl ionone
10	Methyl coumarin
50	Oil bergamot

(*Continued on page 677*)

AMERICAN PHARMACEUTICAL FACTORIES ARE OBSOLETE*

BY FRANCIS CHILSON INDUSTRIAL CONSULTANT

It would be a good thing for the industry if the majority of American pharmaceutical plants were burned up, blown up, or otherwise demolished. With very few exceptions, they are obsolete and inefficient. I refer to the buildings themselves; not necessarily to the equipment they contain. The majority of drug plants are multiple-story buildings varying in age all the way from relatively new ones up to a hundred odd years old. These buildings are of every shape, size, style, loading capacity and location. Many of them are in the wrong locations. Like Topsy they "just growed."

I have seen many plants consisting of several buildings, every one of which was of different height, style and location, and built with no reference to each other. The buildings are of different widths and lengths; of different floor levels, different loading capacities and ceiling heights.

The plants of the Norwich Pharmacal Company and the Chattanooga Medicine Company are typical examples of what I mean. With only partial exceptions even the plants of most of the very large firms —Parke, Davis, Pfizer, Lilly, Withrop Laboratories and Squibb, to name a few—are but little better. All these plants have the best of modern equipment and, in some instances where they have designed it themselves, their equipment is outstanding. But it can never be utilized with the utmost effectiveness because the buildings in which the equipment is housed will not permit maximum efficiency in the utilization of that equipment, either for production or for materials handling. Neither will such a congeries of buildings allow maximum utilization of labor, nor permit effective supervision. It can be bluntly said without fear of refutation that little foresight was used in constructing or utilizing these buildings. When they were built there was obviously no conception of the influence that the style, shape, size and location of a factory building has on operating costs, flexibility and expansibility. Our factories are messy, overgrown drugstores and it was, indeed, out of drugstores that so many of them grew.

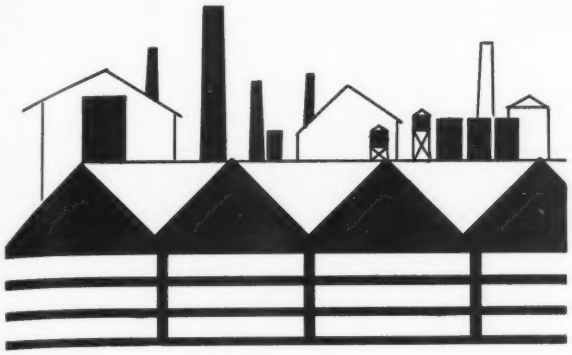
*Presented at the Pharmaceutical Manufacturers Association, Western Regional Meeting, February 1959.

We are now in a period of high and increasing operating costs and intensified sales service demands and the trend is up! up! up! Therefore it is becoming increasingly as uneconomic to continue operating obsolete buildings as it is to operate obsolete equipment. *We must rebuild!* We must stop thinking of our business in drugstore terms. We are becoming a high volume business. We are a two billion dollar industry now, and by 1970 we shall double our physical volume; but we will not double our profits—not by a long shot! That's why we must rebuild now. We have been educated to think of our industry in terms of high profits and low volume. We've got to learn to think in terms of high volume and relatively low profits.

Profit margins in the drug industry have hitherto been so high that management has had an unfortunate tendency to denigrate production necessities. Plant managers as a matter of course have a difficult time getting appropriations for essential production tools.

Managements fail to realize that factory buildings also are tools, just as labeling machines are tools. I have repeatedly said that buildings are the composite tools of which individual machines are but parts. The continuous operation of equipment at a high rate of efficiency depends upon getting materials to and from these machines at an even, uninterrupted rate of flow; it depends upon utilization techniques; it depends upon the comfort, skill and alertness of the people operating the machines; it depends upon the speed with which mechanics can reach the machines to remedy stoppages; it depends upon the ease and continuity with which labor can be supervised. These things are functions of the shape and style or type of the buildings that contain the machines. I have seen innumerable installations of the best possible machines in buildings which make it utterly impossible ever to use that equipment at maximum efficiency.

The thing I want to impress on top managements everywhere is that the location, shape and design of your factory buildings have an enormous effect on hidden or intangible costs and total output per person, per machine, per square foot or however else you want to measure it.



Let me give you a good example of the effect of intangibles on operating costs. Recently I advised on the design of a plant of 257,000 square feet for Aspro-Nicholas Ltd. outside London. This firm makes proprietaries, ethicals and household and veterinary products and it owns and operates Ivers-Lee International, Ltd. Before the new plant was built the firm occupied a collection of one-story buildings scattered through an industrial estate. This therefore was a case of moving from a collection of poorly designed one-story buildings to a consolidated one-story building in the same general area. All the new methods of palletizing and handling materials recommended for the new building could be and were used at once in the old buildings while the new one was being erected. Although the old buildings were good guinea pigs for experimental trials of new procedures, I began to worry that when the new factory was finished it would show no substantial economies over the old ones. I visualized the managing director telling me that the new building hadn't saved a damn cent!

But I needn't have worried. The new plant hadn't been in operation six months when I had a letter from the director of production telling me of his amazement at the size of the unanticipated savings made possible—to use his phrase—"by the geography of the new plant." Of course the new plant is completely air-conditioned and properly lighted. Material flow is faster and more uniform. Clerical work and supervision have been slashed—by geography—to an enormous extent, and supervision is much more effective. The working force is happier and more comfortable. Mistakes are fewer. Aspro-Nicholas is now operating one of the largest aspirin tablet plants in the world—in excess of 8,000 pounds of tablets daily —with only three men who do all the work of mixing, slugging, granulating, compressing, and sorting. I challenge *any* American firm to match that!

I could cite dozens of cases where new one-story buildings not only exceeded anticipated savings, but produced savings in many ways that were not anticipated.

So far as I am aware only two firms in the drug industry have had the guts to scrap improperly designed but relatively *new* plants when they were found to be inadequate for present and future requirements. These firms are Upjohn and Carter Products. Around 1930, Upjohn built a fourteen-story building to house factory and research operations. It was a good looking, well constructed building but actually it was neither a suitable research building nor a factory; it was more like an office building. It was difficult to conceive how a bigger mistake could have been made—until it was matched by the new building of Smith, Kline & French.

Quite recently I was retained by Carter Products to design a new research laboratory, which was to have been erected on the site of the existing plant. This plant was a comparatively new one, designed in the Thirties by the same big-name architectural firm that had designed the original Upjohn factory. Like the old Upjohn plant, it was inadequate too, because of basic faults in building design and site layout. When I had finished designing the laboratory and obtained preliminary estimates on the cost of building it, I pointed out to the management that, since the existing plant and the existing site were hopelessly inadequate, the effect of building an expensive, specialized research building on the site would be to depreciate the resale value of the property. No one, I pointed out, could utilize the plant and laboratories effectively unless the purchaser happened also to be in the pharmaceutical business. My recommendations were accepted; a new, very large site was purchased and an efficient plant and laboratory are being built.

We do not hesitate, that is, the more enlightened of us, to scrap machines when much better and faster ones become available. Why should we hesitate to scrap buildings that make it impossible to utilize such machines to maximum effectiveness?

Building costs, depreciation, taxes, maintenance and insurance, together form an exceedingly small part of total factory costs and an absolutely infinitesimal percentage of marketing costs. Established companies have little difficulty in borrowing money for construction purposes, regardless of how small they are. There are many small and large companies in the trade blindly blundering along in antiquated buildings, which, if they only realized it, have such a large inherent increment in land valuation alone that the profit on the sale of the old properties would go a long way toward financing new plants in the right locations.

When it comes to a consideration of factories and factory costs, top managements are all too often penny wise and pound foolish! As long as space can be found in the old outmoded, inadequate, inefficient buildings to shoe-horn equipment into them, they are satisfied.

Now why do I emphasize the importance of properly designed and located factory buildings? Taking a long view of the future, the first thing I see on

(*Continued on page 682*)

NON-TOXICITY of Aerosol Hair Sprays*

BY J. H. DRAIZE, A. A. NELSON, S. H. NEWBURGER AND E. A. KELLEY†

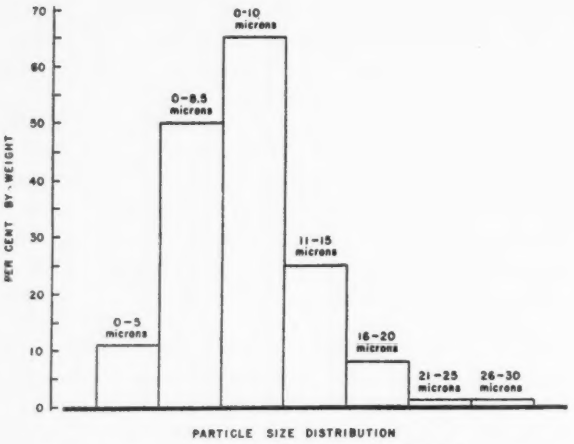


Fig. 1 Distribution of particle size in unimpinged hair spray.

Bergmann[1] *et al.* have recently reported on two clinical cases of pulmonary thesaurosis, suggesting that these may have resulted from inhalation of spray during use of aerosol hair spray preparations. In addition these authors stated that the subcutaneous injection in guinea pigs of the solid nonvolatile residue of a hair-spray formulation resulted in the deposition of cytoplasmic granules in the reticuloendothelial cells of the liver and spleen. This deposition was considered the result of characteristic biological reactions known to be associated with the parenteral introduction of natural and synthetic resins. These findings indicated to the authors that the human lesions which they reported were due to the inhalation of macromolecular substances contained in the hair spray. More recently, Calandra and Kay[2] reported on inhalation exposures to two types of aerosol hair spray preparations on guinea pigs, three times daily for periods varying from 45 to 90 days. They failed to obtain evidence to substantiate the finding of pulmonary thesaurosis in their experimental subjects.

The report of potential dangers in the use of aerosol hair sprays led us to a comprehensive investigation of these products. A survey of aerosol hair sprays currently in use indicated that the majority of these products may be classified for our purposes into six types on the basis of their hair fixative or film-forming component. These six types are: (1) polyvinylpyrrolidone (PVP), (2) a copolymer of polyvinylpyrrolidone and polyvinyl acetate (PVP-PVA), (3) shellac, (4) dimethyl hydantoin-formaldehyde resin (DMHF), (5) modified polyacrylic acid resin (MPA), and (6) lanolin. Lanolin is not, in a strict sense, a hair-fixative film, but is rather an oily or unctuous hair dressing dispensed by means of aerosol propellents.

A representative sample of each of the six types of sprays was selected for our investigational work. The percentage of the nonvolatile components (heating for 2 hours at 105° C.) of each sample, representing the given types used in our investigations, is listed in Table 1. At the outset of these investigations it was realized that data on the physical characteristics of the atomized sprays would be necessary in an appraisal of their potential toxicity and safety for use. Such studies should include the determination of particle size, their distribution, concentration of material in atmosphere, as well as rate of settling from the atmosphere. The physical data on the sprays as atomized from the pressurized containers were obtained by personnel and special equipment of the Agricultural Research Center, United States Department of Agriculture, Beltsville, Maryland.

The entire range of size of particles and percentage of distribution according to their size is shown in the graph in Figure 1. The results are expressed as the average for all six sample "types." This was considered permissible since the distribution of the size of the unimpinged particles did not vary by more than 10 per cent from one sample type to another. The DMHF and lanolin-type sprays did exhibit slightly larger particles, although well within the 10 per cent variation. Approximately 50 per cent of the particle weight represented solvent.

Particle sizes varied from 1 micron or less to 30 microns in diameter, with a mass median diameter of 8.5 microns. It is significant that 65 per cent by weight of the unimpinged spray was of particles in the range of 10 and less microns in diameter. Particles of a size of 3 microns and less can readily reach

TABLE 1

Non-volatile Matter in Hair Spray Types

Sample Hair Spray Type	Non-volatile matter per centage
PVP	1.41
PVP-PVA	1.72
Shellac	1.36
DMHF	1.6
Modified polyacrylic acid	1.41
Lanolin	4.37

*Presented at the Scientific Section meeting of the Toilet Goods Association, New York City, May 1959.

†Divisions of Pharmacology and Cosmetics, Bureau of Biological and Physical Sciences, Food and Drug Administration, U. S. Department of Health, Education and Welfare, Washington, D. C.

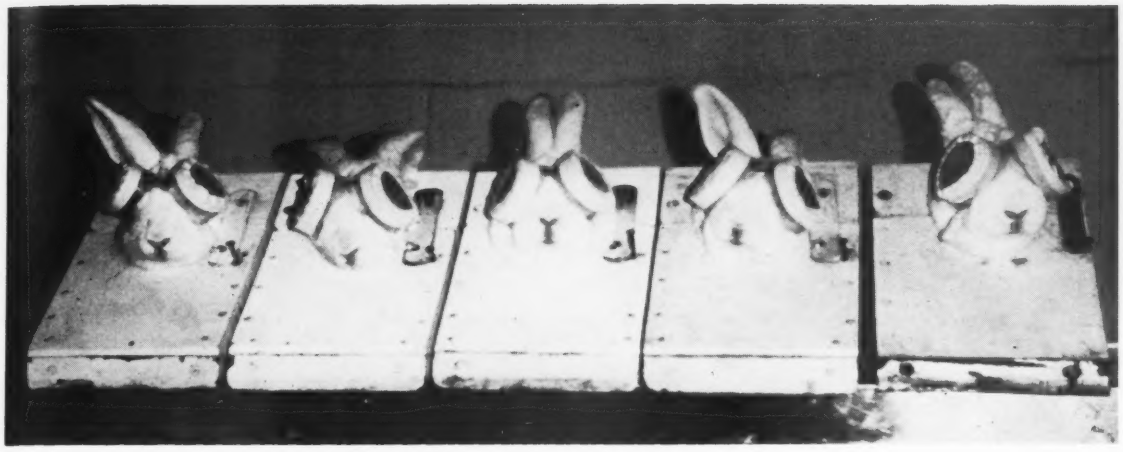


Fig. 2. The immobilized animals, protected with goggles to prevent eye injury during spray operation.

the alveoli of the lung, and those in the range of 3 to 10 microns do so less readily, whereas particles larger than 10 microns are quite efficiently removed by the ciliary apparatus of the respiratory tract.[3]

Human Exposures

Women volunteers were used to obtain data on the six types of sprays. Prior to the experimental exposures, spray-release time was determined on a number of women during a normal hair-spraying operation. The average spray-release time was found to be ten seconds. In order to obtain additional data to cover cases of exaggerated or excessive use, additional exposures involving 30-second spray releases were included. Each subject was, therefore, exposed to a 10- and a 30-second release of the respective spray and following each such release remained in the sprayed atmosphere in a closed cubicle for five additional minutes. The cubicle measured 5′ x 6′ x 6′ (180 cu. ft.), that is, a small confined room, which might be comparable in size to a small bath or powder room. Each subject was sprayed at the distance indicated in the label directions for use on the container. If no directions for spraying were furnished, the subject was instructed to spray half the time at a distance of 6 inches, and the other half at 12 inches from the hair. The room was thoroughly aired after each test. A Mine Safety Applicance Company's Electrostatic Model F Sampler was used to sample the atmosphere. It is equipped with an aluminum tube which was weighed before and after collection of sample. The sampling tube intake was placed 5 feet above the floor and approximately 1 foot in front of the woman's head. The air sampler collected particles from 1/12 (15 cu. ft.) of the air volume in the room during the 5-minute sampling time. The tube was weighed 5 to 10 minutes after collection and, with the exception of the lanolin type, the deposit was found to consist of dry powder.

The normal adult at rest has a respiratory rate of approximately 16 per minute. There are approximately 500 cc. of tidal air involved in each inspiration. However, all of this volume of tidal air does not reach the alveoli of the lung, since approximately 150 cc. of this total is designated as "dead air" and occupies the nasal cavity, larynx, trachea and bronchial tree. Therefore, only 350 cc. of new tidal air reaches the alveoli per inspiration.[4] This permits a calculation of total inspired air volume reaching the alveoli of the lung of the subject during the 5-minute period of exposure, namely, 350 cc. x 16 x 5 = 28,000 cc., or approximately 1 cu. ft. of air.

It must be admitted that minor absorption of spray material may take place from the "dead air" in the upper respiratory tract; such amounts are regarded as inconsequential. The data obtained on the amounts collected in the sampler tube during 5 minutes of exposure for both 10- and 30-second releases for each type of spray are summarized in Table 2.

TABLE 2

Human Exposures to Hair Sprays

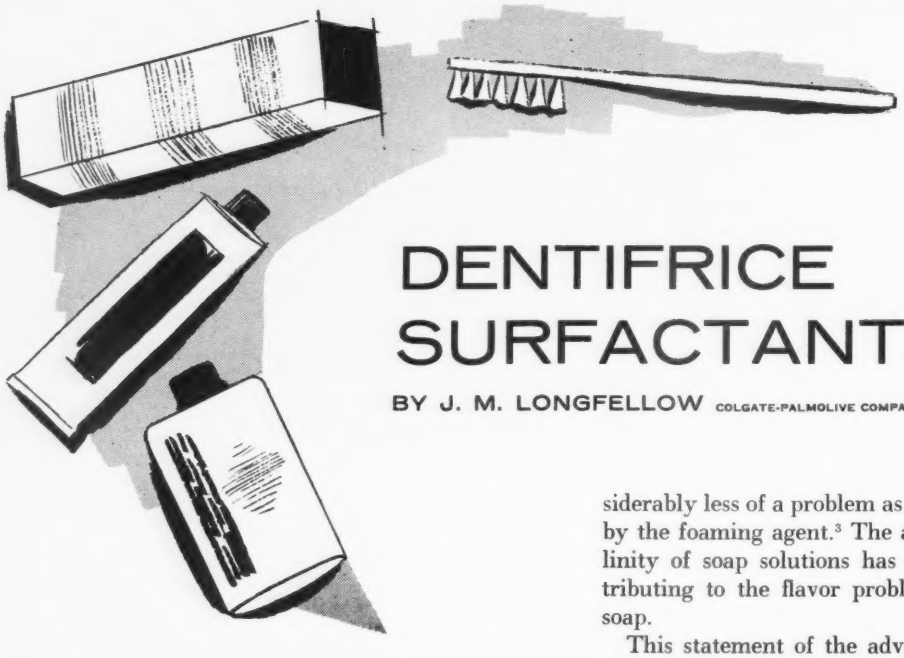
Weight of the non-volatile portion of the various sprays in the atmosphere following 10 seconds, and 30 seconds treatment of hair.

Sample "Type"	Spray Released		Non-volatile spray in 15 cu. ft. of air	Non-volatile spray inspired in 5 min. exposure
	sec.	gm.	gm.	gm.
PVP	10	12.0	0.0020	0.00013
	30	35.7	0.0050	0.00033
PVP-PVA	10	12.0	0.0020	0.00013
	30	27.0	0.0060	0.0004
Shellac	10	8.8	0.0024	0.00016
	30	22.5	0.0038	0.0002
DMHF	10	3.5	0.0005	0.00003
	30	13.7	0.0042	0.0003
Modified polyacrylic acid	10	8.7	0.0045	0.0003
	30	12.3	0.0090	0.0006
Lanolin	10	12.5	0.0067	0.0004
	30	35.6	0.0310	0.002

Animal Studies

Rabbits were used for the acute and the 90-day inhalation studies. The choice of this animal subject in preference to the mouse, rat or guinea pig was based on the fact that the rabbit is less likely than

(*Continued on page 644*)



DENTIFRICE SURFACTANTS*

BY J. M. LONGFELLOW COLGATE-PALMOLIVE COMPANY

Pacifico and Ionescu[1] have estimated that one million pounds of surfactants were used in tooth paste in 1955, a year in which retail sales of tooth paste were $144,480,000; in 1957, then, when sales of tooth paste were $202,340,000 the consumption of surfactants was of the order of 40 per cent higher—about 1.4 million pounds. They have also reported that, in 1955, the surfactants principally used in dentifrice were acyl sarcosines and fatty alcohol sulfates; nothing published since that time indicates that there has been any significant change in the identity of the surfactants dominating tooth paste formulations.

Soap has been replaced by anionic syndets in all the major brands of dentifrice, and thus practically completely in this market.[2]

There are two principle and interrelated reasons for this complete replacement of soap, namely, foaming action, and effect on flavor.

In general, those surface active agents used in dentifrices produce the right amount of foam at lower concentrations than is necessary when soap is used. The improved uniformity of foaming action, as dentifrice compositions containing syndets age, is also a marked advantage of these compositions over soap-containing analogues.

Whether the improved flavor, that is, more easily flavored, characteristics of syndet-containing tooth pastes compared to those containing soap is due to a lower objectionable taste of the syndets used, to the fact that syndets may be used in lower concentration, or to a combination of these factors, is perhaps an academic question, since in practice there is no doubt that the syndet-containing tooth pastes offer considerably less of a problem as to the flavor contributed by the foaming agent.[3] The appreciably higher alkalinity of soap solutions has also been cited as contributing to the flavor problem in the pressence of soap.

This statement of the advantages now proved for syndets in tooth paste may make the problems of substituting syndets for soap in tooth paste appear much simpler than they were in fact. No toiletry formulation is more sensitive to small changes in composition than is tooth paste, nor requires more careful and exhaustive testing to assure the formulator that the viscosity, particularly, is within the very narrow acceptable range for this product, and will remain so after many months on its way to the consumer. The interrelationships and slow reactions possible between the components of a semisolid slurry of polishing agents, surfactants, polyols, colloidal gums and flavoring materials is almost infinite. The painstaking empirical study of the effects of formula adjustments requires a staggering amount of experience, patience and skill; the substitution of anionic syndets for soap in tooth paste compositions was no mean accomplishment, and the formulators who accomplished it may look back in justifiable pride at their achievement. One rather obvious difference between soap and syndets is that of their "slip," and this difference is reflected in the properties of dentifrice formulations. Changes in other constituents, as, for example, in the amount and type of gum-binder, to match the "slip" (related properties of a synthetic containing dentifrice to those found desirable when soap was used), results in changes of viscosity and stability of the paste.

Adjustments in the formula to improve viscosity and stability are then necessary, and the concomitant property changes encountered when this primary objective is achieved will require still further formula adjustments. Fortunately, the experienced dentifrice formulator acquires over the years an intimate and detailed knowledge of the interaction of literally hun-

(*Continued on page 682*)

*Presented at the 45th Annual Meeting of the Chemical Specialties Manufacturers Association, Inc., December 1958.

Packaging and Selling

Vita-Moist Cream by Avon, in a
package featuring a large white plastic cap, by Armstrong Cork Company, with silk-screened gold lettering and design by Ceragraphic, Inc.
The yellow glass urn-shaped container is by Hazel-Atlas Glass Division, Continental Can Company.

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PACKAGING COSMETICS FOR MASS MARKETING*

BY WARREN B. DUBIN CHESEBROUGH-POND'S, INC.

Packaging cosmetics for mass marketing today means in large part that the products must have sufficient appeal to meet retail self-service conditions. Besides protecting the contents and attracting attention, there are a few other important factors involved. These we determined and applied in the repackaging of Pond's cosmetics for mass marketing, and in the development of new packages for additions to the line.

Pond's, which sold beauty products to our grandmothers and to our great grandmothers, has been and is still known primarily for its face creams, which are sold through retail outlets of many kinds —drugstores, variety stores, food stores and department stores. In recent years, the trend toward self-service in these outlets has been spreading rapidly, as market surveys reveal.

In the drugstore field, more than 33 per cent of all outlets, accounting for an estimated 50 per cent of total drugstore sales, operate as self-service units. In the variety store field, 42 per cent of the national chain outlets, accounting for 69 per cent of their total business, had become self-service units by the end of 1957. And during that same year in the food store field, supermarkets and superettes alone represented 32 per cent of all grocery stores, and did 92 per cent of the total business.

Even in the department store field, which has not been broken down according to self-service classification, reports show that self-selection, although not store-wide, is becoming very usual in cosmetic sections.

This move toward self-service in retail outlets has clearly affected Pond's creams and their packages. At about the same time that the self-service trend was taking over, an examination of our sales figures versus total market growth for face care preparations

Pond's new cold cream, vanishing and dry skin creams "on the shelf."

indicated that we were holding our own in dollar sales, but were losing a share of the market; that is, while the market was increasing, our sales weren't. To get at the facts behind this decline in share of market, we made a study of our past and current market situation, including packaging.

The Pond's jars now on the market, although modified in line and label many times during the last half century, still bear considerable resemblance to the original containers. Perpetuation of this family likeness was deliberate, and backed by some pretty sound thinking on how to win and hold maximum brand preference in a woman's mind.

If I may explain this point briefly, in the 1900's when Pond's first marketed their face creams nationally, cosmetics had only limited acceptance as helpful, or even safe, aids to skin care and beauty. Not that American women were any less interested in improving their appearance than they are now—even in those days they purchased the largest quantities of toiletry and bath aids in the world. But what

*Paper presented at the Packaging Conference of the American Management Association in Chicago, April 1959.

Cream jar styles dating from the 1920's to the current Pond's style.

Pond's newest cream jar design, to be adapted to the whole line.

NEW FORMULATION SERVICE . . . most up-to-date of its kind in America, to help fillers and marketers develop new aerosols, modernize older ones, profitably!

ALL REPRESENTATIVES TECHNICALLY TRAINED . . . you'll enjoy dealing with men who know aerosol markets, understand production problems.

ON-TIME DELIVERY of the quantity you need, from a nationwide network of distribution points.

YEARS OF EXPERIENCE back the high quality of UCON Propellants . . . and the technical assistance now available to you.

CARBIDE has long been active in emulsion technology, surface-coating technology, silicones, solvents, and the manufacture and handling of gases . . . all associated with the aerosol industry. Thus, UCON Propellants are a logical extension of CARBIDE's research and development programs.

For more information, write: UCON Propellants, Union Carbide Chemicals Company, 30 East 42nd St., New York 17, N. Y. Call, write or wire us, today! Attention, Dept. B-5.

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UNION CARBIDE
Ucon
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propellants

UCON Propellants are available in five grades

UCON Propellant 11 Trichloromonofluoromethane
UCON Propellant 12 Dichlorodifluoromethane
UCON Propellant 22 Monochlorodifluoromethane
UCON Propellant 113 Trichlorotrifluoroethane
UCON Propellant 114 Dichlorotetrafluoroethane

Display packers for Flowing Cold Cream and Flowing Moisture Cream.

they wanted first of all in a cosmetic product was an assurance of quality.

Pond's creams earned that identity in a comparatively brief span of time. In the competitive deluge of 1923, when they were surrounded by no less than 324 brands of about the same price, and when the more expensive brands which formerly had sold through beauty shops flowed into mass-market outlets, Pond's creams weathered the storm and retained their leadership. Their packaging had become firmly associated with quality in the mind of the consumer, and it was to Pond's advantage to preserve that association in future package designs.

This was all well and good in the days when a customer purchased her cosmetics from a sales clerk over a store counter. But Neilsen studies point out that the major reason for loss of brand position today is competition from a new or improved product *better fit for current marketing conditions*. How, then, were our cream jars of the 1950's faring in self-service situations?

I believe it is accurate to say that the most important function of advertising, particularly where mass-market products are concerned, is to pre-sell those products and create brand images. In self-service situations, the sale is made when your customer sees your product and consciously or unconsciously associates it with a familiar advertising message—when the connection is made between advertising and point-of-sale. Pond's was not making enough of these connections. Customers were having a hard time spotting our products among all the competing brands displayed in retail outlets. When they did find them, the visual appeal next to competition was questionable.

Until now, we had been proceeding on the assumption that the greatest factor in our favor was Pond's reputation for quality and reliability. But you can sometimes get too close to a situation to be completely objective, so we turned to outside help. We retained an independent research firm to conduct a study in depth on Pond's creams versus competition. We wanted to determine clearly what our "image profile" was and to relate it to our marketing objectives. We wanted to know, in today's market and from a consumer standpoint, what were the strengths, the weaknesses and the potentials of our products. Principally, we were looking for direction in product and packaging improvement.

Results of the study indicated that our image profile had positive aspects, but we were not taking full advantage of them. We learned, for example, that on the whole women believed Pond's creams would do anything claimed of them. They were considered superior because Pond's was thought to be the most reliable manufacturer in the cosmetic field.

But we learned that women can have one idea about the contents of a jar and another about the package itself. Pond's packaging was housewifely, unexciting, unromantic. We were reminded that packages have distinct personalities which must complement the personality the customer conceives for herself, or the personality she wishes to be. Pond's packaging, especially when viewed with competition, projected the feeling of "good old reliable," lacking in smartness and social status.

We concluded that we must repackage for self-service selling, and that the new package must ultimately be its own salesman. It must be striking enough to stand out from competition, to catch the eye of the passing shopper and to reflect forcefully the advertising. At the same time, it must have the exciting appeal of a new fashion, be pleasingly feminine in shape and color, and give the impression of quality.

(*Continued on page 683*)

New cold cream shelf packer, showing the adaptability of the motif.

Pond's new luxury item, Lavish, which spearheads the new product image.

We are producing private mold miniature perfume bottles for many of the best known names in the industry. We also supply 1/2 dram miniatures in the popular stock designs illustrated below. Most of these styles are available in a wide range of larger sizes.
CARR-LOWREY GLASS CO.
Designers and manufacturers of fine glass containers
Factory and Main Office: BALTIMORE 3, MD. • New York Office: 415 MADISON AVE. • Chicago Office: 1572 MERCHANDISE MART

Packaging and Selling

The Cosmetic Industry is used to the unexpected. Each year this industry is enriched and expanded by some new product that arrives upon the market scene, not from the chemist's laboratory or the factory or market research, but through the flair or the inspiration or the imagination or the luck of some individual, very often in a small company.

If you would like a comparison, just imagine a famous fishing resort where all the professional fishermen in their great big party boats are anchored out in the spots that experience has proved are the best fishing places. Suddenly out of the mist appears a row boat with somebody puffing and straining at the oars. Not knowing just where to anchor, and as a matter of fact with all of the good spots completely filled by the great big boats, our little man at the oars takes a long chance and drops his anchor in a spot nobody has thought worth trying.

All of a sudden he hooks a great big fish and as this fish appears above the surface of the water, there is an enormous burst of activity among all of the professional fishermen. The water boils as the anchors are pulled in and all the great big boats converge on this little fellow at a place that none of the big professionals ever thought of trying.

One of the best examples of just how this happens is the strange and wonderful phenomenon of the white lipstick as of this year. Reports from all of the big stores indicate very conclusively, at least among the women of America who are style, fashion or glamour conscious, that the sales of this trade's new product, the white lipstick, in the first few months of its life has already equaled the sales of other lipsticks and, most wonderous of all, these new sales have not in the slightest affected the sales of any of the established lipsticks by brand or color.

Certainly the American woman, when something intriguing comes along, at least in the products of this industry, is just as ready to accept something new, just as enthusiastic and just as imitative as the American kids are with the hula hoop.

According to reports, here is the way the white lipstick came to be born.

There is a small cosmetic company in this country which does a slight business in New York City, primarily on Madison Avenue, and a small specialized business in Los Angeles—Michel Cosmetics, Inc. However, the company does a substantial business through South America and an excellent business in Europe. Its products are mostly makeup with, of course, lipstick predominating.

A couple of years ago this company had a request from an Italian customer for a chocolate lipstick. The idea of a chocolate lipstick at this time was so unconventional, so new and so puzzling that the company at once wrote to its Italian customer and asked just how, as such an oddity, a chocolate lipstick could find a market. The Italian company replied that the lipstick would not be used alone, but as a foundation to provide a variety of final tones when a conventional lipstick was applied.

The chocolate lipstick was developed and proved a success in Italy. At the same time this started a train of thought in America along the lines of a foundation with a lipstick or the use of a lipstick that would blend and change the color, permitting women to experiment with a particular shade suited to their coloring, style or inclination. This was how the white lipstick was born.

This industry is used to stunning surprises market wise, as we have said. Anyone familiar with it knows that on many occasions products have been introduced which have so caught the fancy of the public that the advertising and the selling never really caught up with the consumer responsiveness generated by store display and word of mouth from woman to woman.

Naturally, everybody with a lipstick has jumped pell mell into the white lipstick but, so far as we have been able to determine in interviews with a number of leading manufacturers, nobody has yet been able to catch up with the overwhelming demand. We hear that original company is shipping in gross lots to stores that never bought more than a dozen, or even less, at a time.

Of course, there are the usual questions around the trade, that is, how long will the white lipstick last, and what are we going to do next year and the year after to match this enormous new volume that has been dropped into our laps.

Maybe the white lipstick will be a cosmetic hula hoop in its cyclical history. It has, however, one very promising feature. We have already mentioned that in spite of the enormous new demand developed for the white lipstick, there seems to be no sign that it is effecting in the slightest degree the sale of other lipsticks. Apparently the white lipstick is all new business. In addition to this, one of the leading cosmetic companies has just completed a survey whereby they discovered, to their startled surprise, that one-quarter of the women interviewed had already been using two lipsticks at a time to secure a suitable blend.

POISON IVY ITCH loses its fire fast in the soothing spray from a handy Crown Spra-Tainer—first and most popular aerosol package. And fast is the word for the way sales go up when products of all kinds are pressure packaged with the help of Crown, pioneer in the field. Crown is the only source of both seamless and fabricated Spra-Tainers . . . offers you five different sizes . . . has unparalleled experience in aerosol packaging. Let Crown serve you.

for cans · closures · crowns · machinery

CROWN

CROWN CORK & SEAL COMPANY, INC.
9300 Ashton Road, Philadelphia 36, Pa.

In other words, the white lipstick may be proving out in the open something that the cosmetic industry has not realized until this point, that American women are reaching the point where they are willing, in fact, prefer to blend their own lipsticks rather than be standardized by any one particular shade.

If this is even partially true, it opens up enormous prospects for expanded business in what is already the number one cosmetic item so far as unit sales go.

It would appear that the Robinson-Patman Act is not at all dead although we have heard very little about it in the last several months.

The people having trouble now are the dress manufacturers, who are all mixed up with the same problems for handling co-op newspaper advertising that has always pestered this industry.

It seems that the dress industry has been developing more and more programs of dealer support through local advertising and, as new manufacturers start branding their products and trying to get some consumer recognition as well as dealer support, they are running smack into this very controversial act. Now competition is developing and the dress manufacturers are crying aloud to Washington that some of their action is being forced by competition.

They are also being told by the Commission that the aggressive buyer who seeks to compel a seller to grant special concessions is equally guilty of violating the law.

In a recent talk a prominent retail executive listed two major tests a package must face: (1) Do they have customer appeal? (2) Do they serve the retailer's needs?

In further development of these two tests, this executive gave the following tests of a good package.

(1) Does the package attract sufficient attention to stop a customer and cause her to pick up or examine the item? (A supermarket study showed that an average shopper passes 260 items per minute.)

(2) Does the package have durability for use in counter display?

(3) Does it speed up the process of self-selection?

(4) Does it show the merchandise "in use," by design, by picture and copy?

(5) Does the art-color-copy do a selling job? Does the message tell the customer why she would want the item? How she can use it? Why it is better than competitors'?

(6) Does the packaging cost force price increases that push the item out of mass-market pricing?

(7) Does the package tie in with national advertising?

As a final explanation point, the executive asks, "What is the result at the cash register?"

It seems to us that it is a little bit unfair to throw all the responsibility for what takes place at the cash register on the package. An awful lot of things are involved in that final motion at the point of sale.

The pharmaceutical industry is a very competitive one. A good test, according to John T. Connor, president of Merck, is how many companies divide up two-thirds of the sales of the industry.

Here, according to Mr. Connor, are the 16 ethical pharmaceutical manufacturers needed to make two-thirds of the industry's sales.

Abbott	Schering
Ciba	Searle
Lederle	SKF Labs.
Eli Lilly	Squibb
Mead Johnson	Upjohn
Merck Sharp & Dohme	Warner-Chilcott
Parke-Davis	Winthrop
Pfizer	Wyeth

The largest ethical pharmaceutical company accounted for less than 10 per cent of the total U. S. market.

The monthly news letter The Ethical Advertiser, published by Donald F. Fitzsimmons, Inc. of New York, gives some very pertinent advice about what to do when management begins to look askance and with an economical eye at the advertising budget.

In order to meet any action of this sort from management, you first present phase 1, which is statistical: the 1959 PDR lists 6,533 brand names plus 5,238 generic names. This is the competition. We ourselves would like to add that in trying to make any impression on a human being's mind today, whether of a retailer or a doctor, you are competing with literally thousands upon thousands of highly publicized names. At one time we made the rough estimate that the drug and cosmetic industry alone was advertising and publicizing a total number of brand names that would be the equivalent of learning to speak six foreign languages fluently.

Add to this some of the scientific tests on people's ability to remember and you wonder how we ever do implant any recognition of a brand name in anyone's mind.

The second phase is briefly to state advertising's objective. In this news letter, it is done in a beautifully simplified way from the viewpoint of selling the doctor. We could just as well substitute consumer or retailer for the word doctor. Here is the definition: "To establish and maintain the trade name in the doctor's prescribing vocabulary."

Of course, as the letter says, advertising should and does do much, much more, but we're talking fundamentals.

Phase 3 describes what advertising is. "Again, at the risk of oversimplification: advertising is salesmanship in print. Advertising is *not* detailing; it is *not* big, black display of the product name; it is *not* a bulleted enumeration of product high points.

"Advertising involves all that salesmanship in print involves: it must attract attention, capture interest, create desire, elicit action. It must do this interestingly, professionally, in good taste. And it must do all this in an increasingly competitive and aggressive market and, by george, boss, they aren't cutting their budget back, so how can we?"

Very few companies have a clear idea of the average cost per call of their salesman. Maybe this would be a theoretical figure that nobody could do much about, but at least a fairly exact knowledge of the cost of each call and the cost of the factors entering into the cost of each call would have a wholesome psychological effect, both on sales management and on individual salesmen.

Recently a large industrial corporation made some studies along this line. As a result they found that the average cost of a call per salesman was $53.96, that the average call resulted in new business of 1,039, which meant a field selling cost of 5.19 per cent.

In addition it was found that the average order required 14.4 calls and these orders added up to an average of $23,437.

Of course, this is the specific operation of one industrial company and has no necessary application in certain other fields. Nevertheless, it is wholesome and sometimes scary revelation to salesmen in any field to discover just how much money it costs to make each call and how much money it costs for each minute of actual conversation with a buyer or perspective customer.

As part of an over-all plan for expansion, Lanolin Plus, together with Associated Products, will be moved early in May from Chicago to a new building just purchased at 37 Empire Street, Newark, New Jersey. This new building on Route 22 contains more than 50,000 square feet of office and warehouse space.

Morton Edell, president of Lanolin Plus, has initiated an extensive new television campaign which will cover such products as Lanolin Plus, their new shampoo, Wash 'n Curl, Tink 'n Set, Pink Ice and the vitamin products, Rybutol.

Last year the Senate Committee stirred up a renewed discussion in advertising when some of the Senators ventured an opinion that advertising often is purely competitive and does not increase total consumption.

In a recent reply to this, the Grey Advertising Agency, in their bulletin, *Grey Matter*, stated: "Effective competitive advertising has served to increase per capita consumption." They further stated: "This effect of advertising is often not realized by otherwise astute businessmen nor by people in advertising."

This is something we do realize, which must make us more astute than many others.

Certain pharmaceutical products must be packaged in a way that will shield the product for its life. Now we hear that, with extended research in ultraviolet absorbers, there may be a development whereby the use of an ultraviolet absorber in a clear-coated transparent glass bottle will satisfactorily screen out the ultraviolet rays and still permit visibility in the product.

In the March issue in this department we quoted from a talk by Herman C. Nolen, president of McKesson & Robbins in a lecture at Harvard University's Graduate School of Business.

In this talk Mr. Nolen said, "Wholesalers find it difficult to find a market for unbranded or unknown merchandise brands, and that is especially true of goods marketed through self-service."

This is, of course, a factual statement of what is very widely happening in marketing today. In other words, manufacturers, particularly in branded packaged goods, through and by means of national advertising, are taking over many of the functions of selling that were formerly exercised by the retailer and the wholesaler.

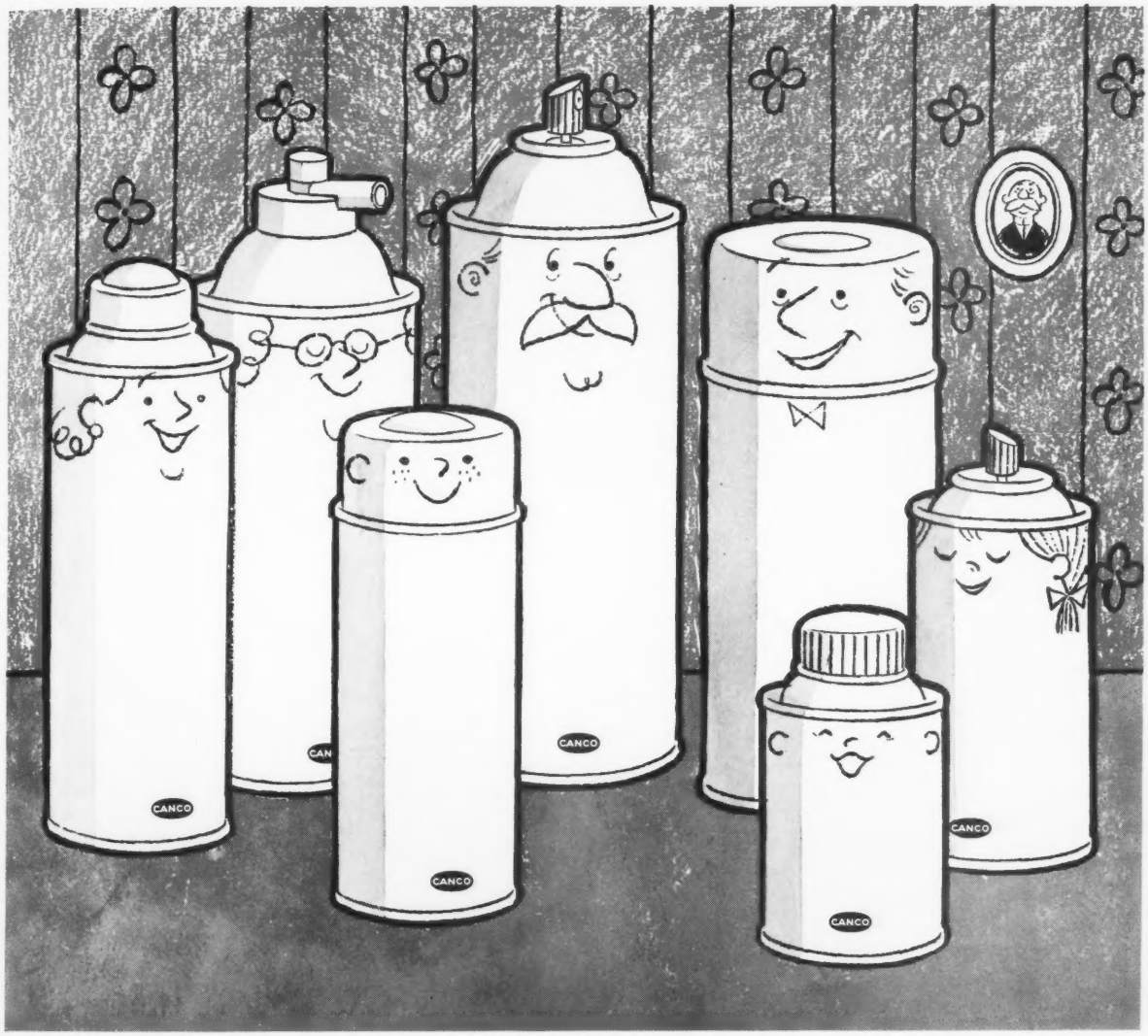
It was for this reason that we made the remark in commenting on this talk that it looked as if wholesalers in common with a very large part of the retail trade were becoming more and more willing to abdicate most of the functions of selling to the manufacturer.

Following this issue we had a letter from Ray Zettell of the public relations department at McKesson & Robbins, which we are glad to publish. We are particularly glad to do this because we did not, in any way, intend to diminish the essential importance of the wholesaler in our distributive system, nor to reflect in any way upon Mr. Nolen, who has certainly been one of the most progressive executives in our industry. Here is the letter.

"Your editorial in your March issue which featured a quote from Herman C. Nolen, president of McKesson & Robbins, taken from his talk before the Graduate School of Business, Harvard University, entirely misleads your readers as to the substance of Mr. Nolen's remarks on that occasion. If you will read Mr. Nolen's talk, copy attached, you will agree that the quote you used to justify your charge that, 'wholesalers . . . are quite willing to abdicate thoroughly all the functions of selling, etc.' was taken out of context and used unfairly in your editorial.

"Mr. Nolen's views on the role of the distributor in today's economy—as expressed in his Tobe Lecture—are directly adverse to your editorial characterization of the wholesaler. He said most plainly in his talk that, 'the middleman is constantly under pressure to do his job effectively . . . he is no longer the passive order taker for producers or the simple purchasing agent for consumers.' In listing the func-

Canco has the largest family of Aerosol cans to fit your product needs!



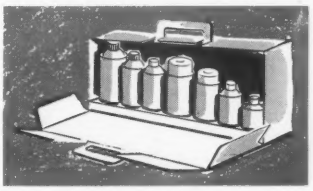
Because Canco has the largest and most complete line of aerosol cans in the industry, you're sure to find the right container to fit your product requirements.

Canco manufactures seven sizes with standard one-inch cup opening or individually styled one-piece tops. Canco also offers an end-use warranty on these containers.

And remember—Canco's famous package design staff is at your service to create new sales appeal for your product with compelling color lithography.

Discover for yourself why so many successful aerosol packers depend on Canco. Call your Canco salesman!

A SAMPLE KIT containing all seven Canco pressure cans is yours free. It's available through your Canco salesman only. Ask him for yours, today!



CANCO Division AMERICAN CAN COMPANY

NEW YORK • CHICAGO
NEW ORLEANS • SAN FRANCISCO

TO ATTRACT CUSTOMERS

let Maryland Glass design a bottle or jar for your exclusive use

When you drop a packaging problem in our lap, the end result is more than a glass container. It is an idea . . . born of restless imagination, shaped by skilled hands, backed by years of sound experience. Our creative staff gives you a selling package that packs well, helps stop the eye and start the sale at the point of purchase. For a successful solution to your design problem, contact MARYLAND GLASS CORP., 2153 Wicomico St., Balto. 30, Md.

PACK TO ATTRACT IN

MARYLAND GLASS

BLUE • AMBER • FLINT

tions which wholesalers are performing for manufacturers, he included the following:

(1) establishes connections with the whole field of retail outlets
(2) furnishes advice as a distribution specialist
(3) reduces costs of physical distribution
(4) reduces manufacturer's capital requirements
(5) simplifies accounting and credit problems
(6) promotes increased sale of products

"In discussing advertising, Mr. Nolen's point was that the wholesaler enables the manufacturer to get the immediate maximum distribution he needs in order to get full value for the heavy investment he must make today in advertising to consumers. He went on to say that, 'Consumers have become brand conscious. Wholesalers find it difficult to find a market for unbranded or unknown merchandise brands, and that is especially true of goods marketed through self-service.'

"We should like to call your attention to Mr. Nolen's comments in the talk on the wholesaler's adjustment to rising costs in distribution.

'Like all businessmen, wholesalers have a constant battle to keep their costs in line and I think they are doing a good job in pursuing the majority of the conventional methods of keeping down expenses, such as increasing merchandise turnover, eliminating waste and the like . . . Wholesalers, as experts in distribution, have done an outstanding job in eliminating wasted motion and effort . . . Wholesalers are concentrating on increasing order size, on high line extension and on promoting fast selling merchandise. These practices bring down costs.'

"As to 'abdicating thoroughly all the functions of selling' (as you charge), wholesalers, on the contrary, have expanded their merchandising services and are participating in cooperative advertising programs—all designed to sell more goods. The effort to provide better service to both suppliers and retail customers has increased—not slackened—at McKesson.

"We hope that you will find a way to correct the false understanding you gave to your readers as to the substance and spirit of Mr. Nolen's remarks at Harvard University.

"Thank you for your attention."

Here's something for the market research people. "A number of studies have shown that people often don't know what they are going to do until they do it; furthermore, that people not only err in reporting their intentions, they also err in reporting what they have done."

This is a quote from the Schwerin Research Corporation Bulletin.

Just to prove that no limits can be set to American research, we announce a recent triumph in antibiotic development.

According to one of the very technical journals, an antibiotic has just been developed that can be taken orally as a treatment for athlete's foot.

More and more, American business is swinging to the opinion that our basic economic problem is consumption. As a vice-president for consumer products of Westinghouse Electric recently said, "From a production standpoint, most manufacturers are pretty evenly matched these days. They all have modern plants. Their engineering staffs are skilled. The job lies in moving their production into consumer homes. In other words, we are more and more planning production to meet consumer needs rather than creating consumer wants in accordance with our production ability."

We would not want to argue with this conception because, for many kinds of products and in many trades, this is undoubtedly the successful way to think and plan for future expansion.

Nevertheless, we would say that small business is continually popping up with a creative idea for a product or a new quality value in a product that sort of jars this kind of thinking.

Probably the best way to operate is to try to keep a happy balance between initiative within the factory for constant product and production improvement while, at the same time, giving full credit to the marketing concept as an essential part of business success.

When a new product or a new formulation is being prepared for the market, usually there is no trouble in protecting or in shielding this information during research and development work. It is only when the product is packaged and ready to market that a critical period is entered upon.

Howard Packard, president of Johnson's Wax, specifically recognized this critical period when he recently urged that some means should be devised for reserving trademarks for American manufacturers until the products that those marks are to identify are ready for market.

"Since trademark rights do not arise until a product bearing the mark is actually sold in commerce, our investment may stand in jeopardy while the product and everything necessary to support its sale are being readied."

Great Britain and Canada provide remedies of this sort.

Andrew Jergens' new lotion aerosol is using not one package but three. The first is in a colorful kitchen container. The second is a design similar to the standard Jergens lotion glass bottle and the third is a cosmetic design using gold, white and black. These containers will be tested as part of a continuous market investigation with aerosol products.

This new packaging idea created an $85,000,000 market

Here's a simple packaging idea with the power to completely change consumer ideas of how a product should perform. Aerosol packaging created an $85,000,000 market for hair fixatives and has revolutionized sales for insecticides, shave creams, colognes and a host of other products. If your product can be brushed, poured or sprayed, you might add new consumer appeal—create a positive competitive advantage if you packaged it in an aerosol.

Sales records and marketing data prove the appeal of aerosol packaging. In a recent survey of the market for hair preparations, 95% of users preferred the aerosol hair fixative and 83% of users preferred aerosol hair dressings. The main reason for each was that aerosols deliver the product in a completely new form—a form that's easier and neater to apply than similar products in conventional packages.

Put the unique advantages of aerosols to work for your products. It's surprisingly simple and inexpensive to have your formulation packaged for testing. Custom fillers near you have the knowledge and equipment to do it for you.

If you don't know the name of a custom filler, write Du Pont. We'll send you a list and include survey data on your market for hair products plus information about Freon* propellents for aerosols. More of today's successful aerosols are powered with "Freon" than with any other propellent. Write E. I. du Pont de Nemours & Co. (Inc.), "Freon" Products Division 345, Wilmington 98, Delaware.

Best-selling aerosols are powered with

FREON® *propellents*—

DU PONT
REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING...*THROUGH CHEMISTRY*

*FREON AND COMBINATIONS OF FREON- OR F- WITH NUMERALS ARE DU PONT'S REGISTERED TRADEMARKS FOR ITS FLUORINATED HYDROCARBON PROPELLENTS.

News in Packaging . . .

Minteer Describes New Chemicals Containers

Robert D. Minteer, manager, packaging development, Monsanto Chemical Company, told the American Management Association's national Packaging Conference that probably no one would have visualized two years ago that today we would be shipping as much as 3,000 pounds of dry powdered chemicals in a single corrugated box. The intermediate bulk container is an important new trend in shipping, he said.

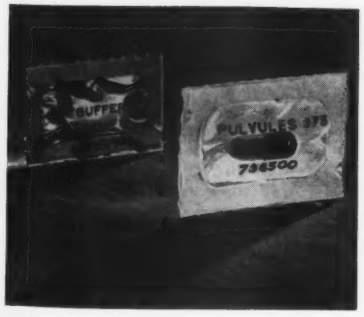
The problem has been to provide "a single-trip container which would be easy to handle, would store in a knocked down condition, would be economical, and would be easy to handle on existing equipment," according to Mr. Minteer, and a variety of corrugated boxes have been developed to fit these needs.

The one that Monsanto has spent the most time developing is a 12-sided unit now available in a model 48 inches in diameter and 60 inches high with a 60 cubic foot capacity. It is currently being used for transporting 3,000 pound units of phosphate chemicals, Mr. Minteer said.

One of the interesting possibilities in new shapes for containers is the tetrahedron, according to Mr. Minteer. First developed in Europe for packaging milk products, it is now being used here for that purpose. It may have applications for bags, particularly for plastic and possible for Multiwall paper, he said. It has more capacity, can be made on the same machinery, and with very slight modifications can be closed on the same type of machinery now being used. Its shape lends itself to a large variety of interlocking patterns for palletized shipments.

White Enchantment cologne spray by Continental Perfumes, a summer cologne body spray packaged and filled by Old Empire, Inc. Valve made by Precision Valve Corporation and the gold over cap by Gilbert Plastics.

Ivers-Lee Company's unit packages showing its Insta-Print coding system, which can mark each unit package with lot number, expiration date, trademark, etc. in virtually any smear-proof color, making possible absolute identification.



National Can Makes Dry Offset Printing Available

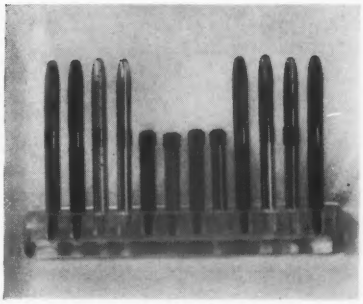
National Can Corporation has begun dry offset printing of metal cans on special order. It is offered for cases in which richer colors than the usual wet lithographic process produces would be a distinct advantage and where volume justifies it.

According to Clarence Pyles, assistant to the vice-president, the dry process' ability to apply up to 40 per cent more pigment saves the cost of an additional pass through the lithography line and achieves substantially the same result. The dry process does require a more accurate setting.

National Can embarked on this technique when a brewer needed a richer white than the wet process prints.

Straub Urges Label Designers Lithographers Cooperate

Kenneth Straub, art director of the Can Division, Crown Cork and Seal Company, recently urged closer cooperation between label designers and the art and lithography department of aerosol container manufacturers. It would eliminate many costly and time-consuming problems, he said. Manufacturers should know both the scope and the limitations of container lithography.



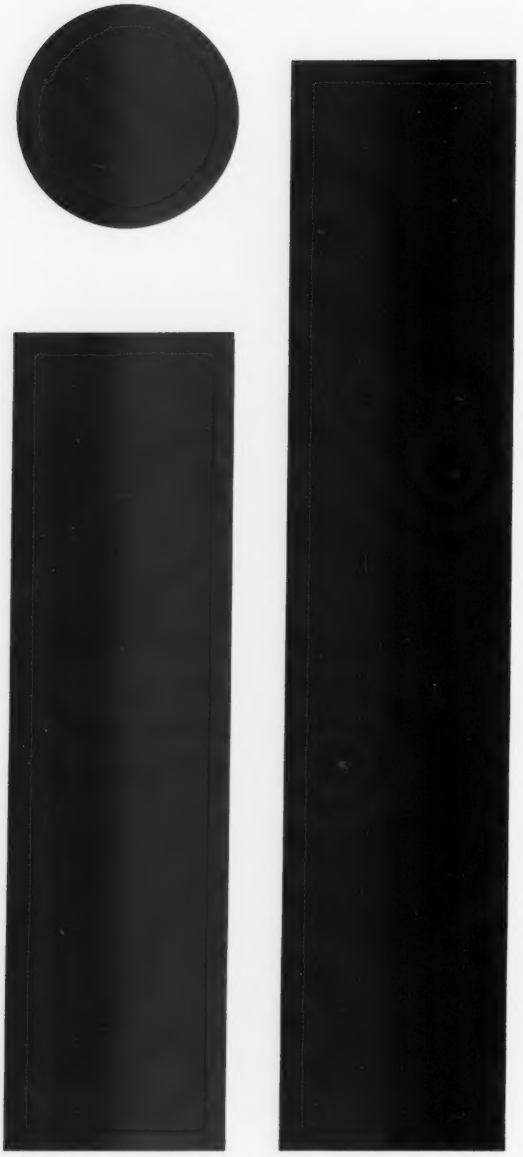
Scovill Manufacturing Company's new mascara applicator and refill, which is now used by 14 leading eye makeup firms in 33 different finishes, some shown above. Polypropylene comb in cap for separating lashes after application.

Stock mold bottles and jars treated by new overall color spray process by Owens-Illinois Glass Company, which facilitates unusual combinations via ceramic materials in all standard ACL opaque colors. Screen decorations can be added.

Ciro's new refillable aerosol cologne dispenser, Vaniti-Mist. Risdon makes all parts except the glass bottle and rubber cushion. The valve can be metered or not. Removable plastic coated glass bottle is easily changed.

Folding Carton Shipments Up

Dollar volume of folding carton shipments increased 5.5 per cent in March over the volume of March a year ago, according to the Folding Paper Box Association of America. Industry output totaled 203,830 tons, up 6.6 per cent.



This is the new Ivers-Lee trade-mark

— a symbol as modern as the people, the plants and the ideas it represents. As it has for over forty years, the Ivers-Lee trade-mark will stand for a forward-thinking Unit-Packaging team devoted to the finest in flexible film unit-packaging . . . it stands for exciting creations in Unit-Packages for liquids, powders, tablets and capsules . . . it guarantees that the contents of every Ivers-Lee package is perfectly protected against all adverse environmental conditions . . . it is our pledge that Ivers-Lee, the world's foremost Unit-Packager, will continue to go forward with the industries it serves!

Ivers | Lee Co.

216 CENTRAL AVENUE, NEWARK 3, NEW JERSEY

Dickens Predicts Return to the Horse

Package designer Robert Sidney Dickens, who heads Dickens Incorporated of Chicago, believes that "the striving for a package to end all packages may lead to the Great Era of Package Disillusionment and, eventually, to the Return of the Horse."

This is the progression as Mr. Dickens sees it. First, the great age of the package build-up, involving a striving for the package to end all packages, which will be followed by the ideal package. This will be one inch wide and 12 inches high, solving minimum shelf requirements and, at the same time, assuring that no other package will be stacked on top of it, since it will reach the bottom of the shelf above.

"This package will contain soap flakes," says Mr. Dickens, "because they are noted for their short three-letter words. By that time, of course, all soap flakes will be reduced to two-letter words. This ideal package, however, will reduce its title to one letter—and that will be the letter 'I'."

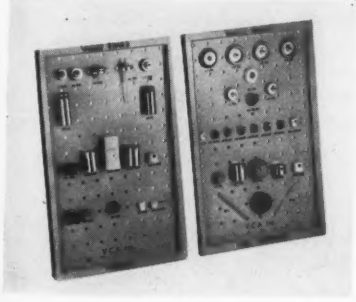
The shape, being that of the letter 'I,' no further identification will be necessary, and it will of course appeal to everyone's ego, "and they will see in this package everything they hope for," says Mr. Dickens. It will look bigger, being white; will have nothing to stop the eye, and hence will have a 100 per cent eye rating; will be economical, because it won't require any printing and above all, it will solve the problem of price-marking, since in essence it will be one big pricing area.

Following closely on the heels of this ideal package will come what Mr. Dickens calls the Great Era of Package Disillusionment, perhaps by someone discovering that the bar of soap improperly sealed was far better because it dried out and lasted longer. Then will come the Return of the Horse—in the form of horse sense.

"I believe," he says, "that in the Age of the Horse, good old-fashioned judgment will be reapplied to packaging and that the package of the future will be a reasonable package —reasonably designed, in good taste, plainly and simply putting its message across in a dignified and reasonable way. And because I give the public credit for a great deal of horse sense, I predict that this package will be a great success," Mr. Dickens concludes.

J. T. Clark's new overcap for aerosol containers, Spring-Grip, which features spring grip that grips can yet permits cap to be removed easily. Cans require no modifications. Now used on Helene Curtis Spray Net cans.

Three-dimensional "catalog" by Valve Corporation of America, which shows prospective packagers and manufacturers of aerosols actual working models, is free on request on company letterheads; lists prices; has space for more.



Glass Containers Reach New All-Time High

Glass container shipments in the first quarter of 1959 reached a new all-time high for first quarter shipments, according to R. L. Cheney, executive director and marketing manager of Glass Container Manufacturers Institute, Inc.

The increase of domestic shipments of new glass containers by the 39 glass container manufacturers who are members of the GCMI and represent more than 92 per cent of the industry set a new record of 4.4 billion units, an increase of 2.6 per cent over the 4.3 billion units shipped the first quarter of 1958. Toiletries and cosmetic bottle shipments this quarter showed an increase of 13.9 per cent over last year's figure.

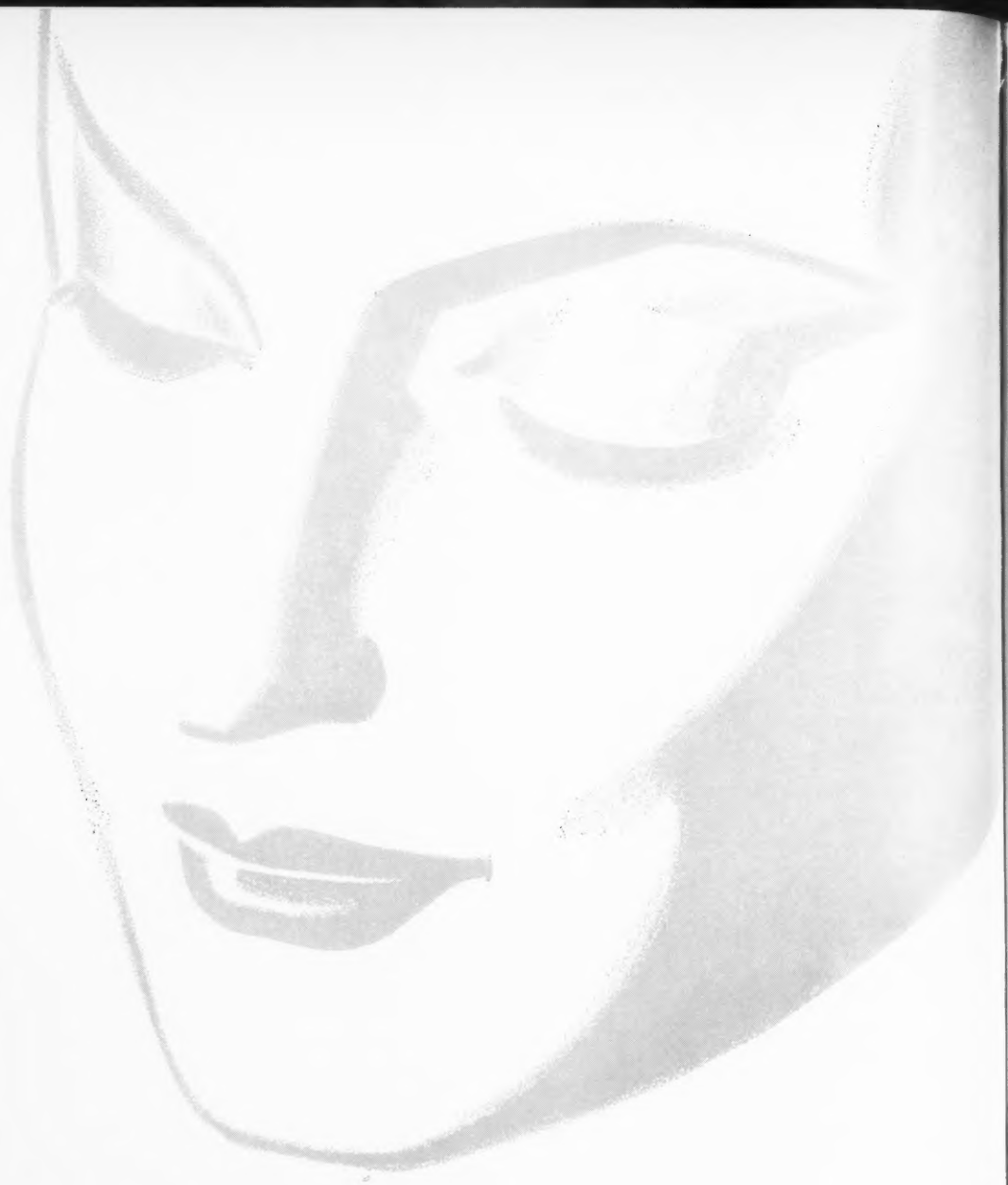
Pat Kerwin assembling novel product mailing for Kinney & Company—safety pins highlighting the safety and also the effectiveness of firm's Chel-Iron Pediatric Drops, Emetrol and Ammorid in pediatrics.

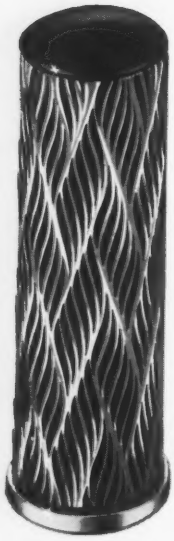
Push-button soap cream, perfected by International Club, susidiary of Angelique. The six-ounce seamless containers by Crown Cork will not leak or rust, and eliminate need for hand lotion, since the soap contains lanolin.

House for Men's new shaving cream dispenser, which has a patented applicator that massages face while it dispenses the correct amount of cream. Called Blue Shaving Cream, it is blue from secret, softening ingredient.

New Aluminum Pressure Can

An extruded aluminum can will be available from the American Can Company in the 6-ounce size by the end of 1959. It features elimination of soldered side seams, all-round lithography and light weight.





WIN HER WITH THE LOOK OF ELEGANCE

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ADDS TO YOUR PRODUCT

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A refined gracefulness is *not* synonymous, however, with high cost — when you turn to Lambert for engine turning. Here in Attleboro, we have coupled the art of single tool craftsmanship with Lambert's exclusive *multitool* process, to give you *quality in quantity*.

Quality-in-Quantity engine turning makes elegance practical

If you would like us to ornament a sample — to demonstrate how Lambert design talent and engine turning can make your product elegant in all but cost — please write enclosing several shells. There is no cost or obligation.

Lambert Engraving Company, Inc.
Attleboro, Massachusetts

NEWS and VIEWS

BY TED KLEIN, PUBLIC RELATIONS DIRECTOR*

Award Winning Commercials

Several months ago it was reported that a high government official stopped traffic so that he could tune in on an early morning radio program. This program, featuring direct reports from news correspondents, is sponsored in many cities by The Metropolitan Life Insurance Company. Many millions of individuals listen to this and similar Metropolitan news broadcasts each day. At the present time they are heard in 37 cities over 42 stations in this country, and in six cities and nine stations in Canada.

Their success in terms of helping Metropolitan achieve public relations goals must be sizable. Any company that spends one-third of its annual advertising budget ($1,000,000) for this sort of a program must believe it is worth it.

The commercials are unique. They do not offer any information about the sponsor's product. Instead, they tell the listener something about an area of health, inviting him to send for a booklet which will provide detailed and authoritative information on specific health subjects.

In the 23 years that Metropolitan Life has been sponsoring these broadcasts, the commercials—I repeat, the *commercials*—have won more awards than many programs. These accolades include The Freedom Foundation Award, the National Radio Advertising Award, the Alfred P. Sloan Award from the National Safety Council, and others.

About 500,000 booklets were mailed free of charge to listeners last year. And not one of these individuals ever met a salesman from Metropolitan Life as a result of his request.

There is no official connection between this series of programs and any medical organization. However, Dr. Walter P. Shepherd, vice-president of Metropolitan, and his staff regularly consult health authorities for information on health problems.

I am sure that the millions of Americans and Canadians who heard the Metropolitan-sponsored broadcast this morning join me in offering thanks for an informed, sustained effort in public information.

*Paul Klemtner & Company, Inc.

Bureau of Labor Statistics

The Health News Institute has reported on the late 1958 figures published by the U. S. Bureau of Labor Statistics. This interesting information is useful in comparing the drug industry with manufacturing in general.

As of September 1958, 103,000 persons worked in the pharmaceutical industry as compared with 100,000 in 1957. Production or nonsupervisory workers numbered 57,000; in 1957 they averaged 57,900.

The rate of separation from the industry as of October 1958, was 2.0 employees for every 100; for manufacturing in general, 3.3 per 100.

The average nonsupervisory worker earned $86.46 per week in 1958, working about 40.4 hours per week.

Wholesale prices for drugs and medicines was 93.9 in October, as compared to 94.5 in June, 1958.

Medical Letter

In 1936, many manufacturers of consumer goods were surprised to learn that a publication was available to the public which compared various items as to cost, durability, safety and manufacturing elegance. This was *Consumer's Reports.*

Two decades later, the same man who founded and was the director of *Consumer's Reports* entered the medical field with a publication which already has sired its share of controversy—the man, Arthur Kallet; the publication, *The Medical Letter on Drugs and Therapeutics.*

This newsletter, much like that of Kiplinger's in format, provides information about effectiveness, toxicity and side effects of drugs, both old and new. In material sent out to 150,000 physicians to encourage subscriptions ($12.50 a year for a bimonthly letter), Harold Aaron, M.D., editor, said that the publication "is intended primarily for the busy physician who finds it impossible to keep up with the vast stream of medical literature on new drugs but who is reluctant to rely on the promotional material of the pharmaceutical houses, with its frequent exaggeration of therapeutic effects and understatement of side effects."

This anti-industry point of view is represented in the way The Medical Letter has so far (seven issues to date) covered new drugs. I have found that of the many new drugs examined by the board of editors only a few were recommended for routine use by the physician.

The Medical Letter is far more interested in emphasizing side effects of drugs than in effectiveness as far as I can see. Its nine editors (all physicians but one) advise caution, caution, caution, when it comes to accepting manufacturers' claims.

Recognizing that the responsibility this publication has undertaken is enormous, Kallet says that each article is checked many times before it is printed. The typical way in which a piece is done is by assigning an expert in a specialized field to study a drug. He then writes a report which, in turn, is submitted to the board of editors. They review it, have other experts check it, and then the final paragraphs are written by the staff in New York.

In a recent interview, he told a reporter, "We recognize our preliminary reports can be wrong, but we consult enough experts in each field to assure that, at least as far as we can judge, what we print is accurate up to the time we publish."

Consultants to The Medical Letter include physicians in private practice, some who are on the faculties of medical schools and others in hospitals and in government service. All writers are paid.

At the present time, 8,500 physicians are subscribers. The publishers, Drug and Therapeutic Information, Inc., are sending 150,000 copies of selected issues to physicians to secure additional subscribers. They are considering advertising and other promotion.

Sampling of the booklets distributed free by The Metropolitan Life Insurance Company.

Millions of people in the United States and Canada suffer the aches and pains of arthritis. Fortunately, many of them have only mild discomfort, sometimes
COOK BOOK
EMOTIONS AND PHYSICAL HEALTH

Patent thoughts and trends

BY THOMAS CIFELLI, JR., PATENT ATTORNEY*

Antimicrobial Toothbrushes

In last month's issue of this journal note was taken of widespread use of antibacterials in various consumer and industrial products, such as soaps, textiles, paints and resins. We now find that another recent patent along this line was issued to Johnson and Johnson for a process for imparting antimicrobial properties to formed articles of synthetic linear condensation polymers. This patent, U. S. 2,880,129, specifically deals with treatment of nylon toothbrushes with a water soluble aryl mercury compound in the presence of dilute aqueous phenol.

The inventor claims that although the treatment of nylon bristles with phenyl mercuric acetate in the presence of aqueous nitric acid was known, this process had disadvantages resulting from the corrosive nature of the nitric acid used. The inventor claims that the use of an aqueous solutions of an aryl mercury compound and a phenol will result in the article showing a zone of inhibition of at least 5 mm. under standard test conditions.

The only claims issued to the patentee cover the process of treating the articles. This is not easy to understand from a mere reading of the patent, as the patent claims that articles made in accordance with its teachings retain their antimicrobial activity even after severe use or scrubbing. Also, toothbrushes made in accordance with the patent teachings are said to be about twice as good as commercially available mercury-containing toothhbrushes, the inventor stating that this can be regarded as an indication of synergistic action between phenol and phenyl mercuric acetate.

The practice of incorporating antimicrobial agents in a wide variety of products may give rise to controversy with the medical profession, at least in so far as the incorporation of antibiotics in cosmetics is concerned. The public press recently has been carrying items indicating that doctors fear that widespread use of such cosmetics may increase the number of persons allergic to antibiotics and may even encourage antibiotic-resistant germs.

Helpful Hints to Inventors

The U. S. Patent Office has recently shown its interest in the welfare of the so-called independent inventor in a very tangible manner. Reference is made to the publication of a pamphlet, "Patents and Inventions," which it is understood may be obtained free of charge by writing to the Patent Office.

Included in the pamphlet are some 45 questions that are frequently asked. Space limitations being what they are, the writer has selected those questions believed to be of widest general interest to call to the attention of the readers of this journal, as follows:

Question about the meaning of the words "patent pending."

(1) Q. What do the terms "patent pending" and "patent applied for" mean?

A. They are used by a manufacturer or seller of an article to inform the public that an application for patent on that article is on file in the Patent Office. The law imposes a fine on those who use these terms falsely to deceive the public.

Questions about patent applications.

(2) Q. I have made some changes and improvements in my invention after my patent application was filed in the Patent Office. May I amend my patent application by adding a description or illustration of these features?

A. No. The law specifically provides that new matter shall not be introduced into the disclosure of a patent application. However, you should call the attention of your attorney or agent promptly to any such changes you may make or plan to make, so that he may take or recommend any steps that may be necessary for your protection.

(6) Q. Are models required as part of the application?

A. Only in the most exceptional cases. The Patent Office has the power to require that a model be furnished, but rarely exercises it.

(8) Q. Can the Patent Office give advice as to whether an inventor should apply for a patent?

A. No. It can only consider the patentability of an invention when this question comes regularly before it in the form of a patent application.

(9) Q. Is there any danger that the Patent Office will give others information contained in my application while it is pending?

A. No. All patent applications are maintained in the strictest secrecy until the patent is issued. After the patent is issued, however, the Patent Office file containing the application and all correspondence leading up to issuance of the patent is made available in the Patent Office Search Room for inspection by anyone, and copies of these files may be purchased from the Patent Office.

(11) Q. What happens when two inventors apply separately for a patent for the same invention?

A. "An "interference" is declared and testimony may be submitted to the Patent Office to determine which inventor is entitled to the patent. Your attorney or agent can give you further information about this if it becomes necessary.

(12) Q. Can the time allowed by the Patent Office for response to an office action in a pending application be extended?

A. No. The time for response by an applicant to an action by the Patent Office is fixed by law and cannot be extended by the Patent Office. The application becomes abandoned unless proper response is received in the Patent Office within this time limit, usually six months.

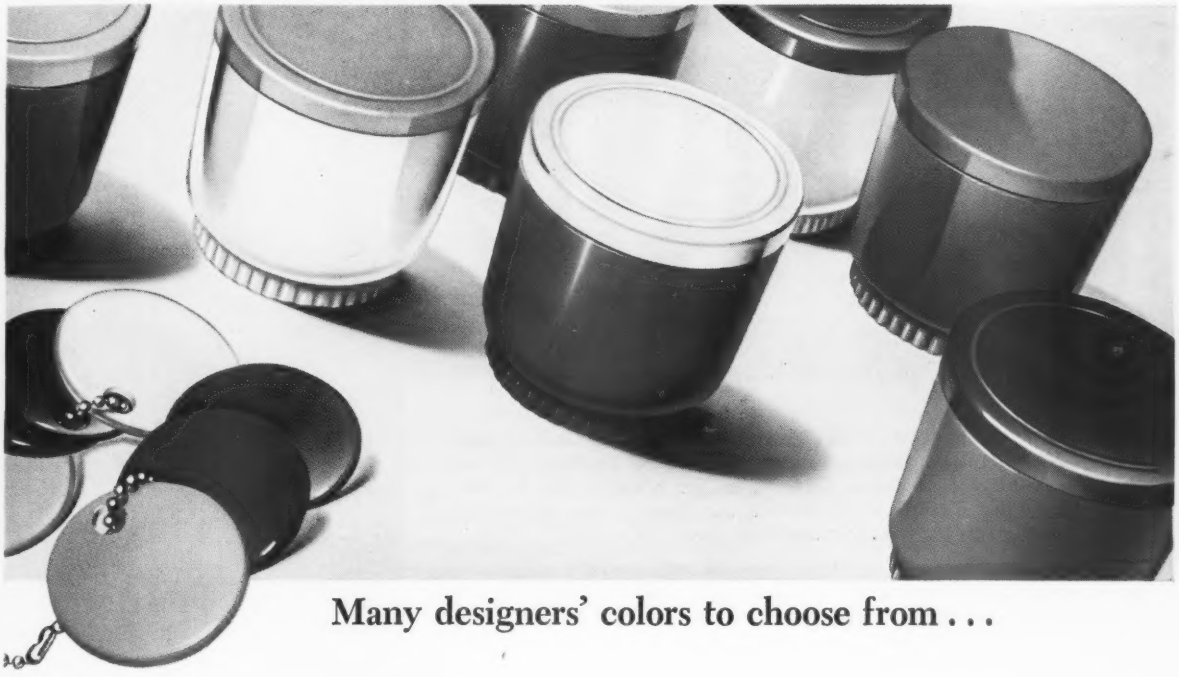
Questions about when you must apply for patent.

(13) Q. I have been making and

*Richards and Cifelli, Newark, New Jersey.

Convenient screw closure . . .
seals tightly, opens easily

Tip-proof design . . .
jars stack quickly, securely



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New Plastic Jar by Owens-Illinois

. . . has all the makings of a top-priced package!

HERE in O-I's new 4½-ounce Plastic Jar you have all the advantages your salespackage needs—color and eye-appeal . . . shelf advantages retailers like . . . user conveniences customers look for. It's a package you'd expect would be priced far higher!

Smartly designed—Plastic Jars stack easily, securely. Their screw closures seal tightly, open easily. And as for color or an eye-catching color combination—you can almost name it! For, in addition to clear plastic, jars are available in a wide variety of opaque and transparent colors. (Also available with domed-top cap.)

Find out more about O-I's new Plastic Jar. Your Owens-Illinois representative will be glad to show you samples. Telephone him, today!

OWENS-ILLINOIS PLASTICS
AN (I) PRODUCT

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COLONIAL APPLICATOR CO.

VINELAND, NEW JERSEY

selling my invention for the past 13 months and have not filed any patent application. Is it too late for me to apply for patent?

A. Yes. A valid patent may not be obtained if the invention was in public use or on sale in this country for more than one year prior to the filing of your patent application. Your own use and sale of the invention for more than a year before your application is filed will bar your right to a patent just as effectively as though this use and sale had been done by someone else.

Questions about who may obtain a patent.

(15) Q. Is there any restriction as to persons who may obtain a U. S. patent?

A. No. Any inventor may obtain a patent regardless of age or sex, by complying with the provisions of the law. A foreign citizen may obtain a patent under exactly the same conditions as a U. S. citizen.

(16) Q. If two or more people work together to make an invention, to whom will the patent be granted?

A. If each had a share in the ideas forming the invention, they are joint inventors and a patent will be issued to them jointly on the basis of a proper patent application filed by them jointly. If on the other hand one of these people has provided all of the ideas of the invention, and the other has only followed instructions in making it, the person who contributed the ideas is the sole inventor and the patent application and patent should be in his name alone.

(17) Q. If one person furnishes all of the ideas to make an invention and another employs him or furnishes the money for building and testing the invention, should the patent application be filed by them jointly?

A. No. The application must be signed and sworn to by the true inventor, and this is the person who furnishes the ideas, not the employer or the person who furnishes the money.

(18) Q. May a patent be granted if an inventor dies before filing his application?

A. Yes; the application may be filed by the inventor's executor or administrator.

(19) Q. While in England this summer, I found an article on sale in a store which was very ingenious and has not been introduced into the United States or patented or described. May I obtain a U. S. patent on this invention?

A. No. A U. S. patent may be obtained only by the true inventor, not by someone who learns of an invention of another.

(20) Q. May the inventor sell or otherwise transfer his right to his patent or patent application to someone else?

A. Yes. He may sell all or any part of his interest in the patent application or patent to any one he pleases by a properly worded assignment. Before assignment of a patent application can become effective, however, the application must be on file in the Patent Office as the invention of the true inventor, and not as the invention of the person who has purchased the invention from him.

(21) Q. If two people own a patent jointly, what can they do to grant a license to some third person or company to make, use or sell the invention?

A. They may grant the license jointly, or either one of them may grant such a license without obtaining the consent of the other. A joint owner does not need to get the consent of his co-owner either to make, use, or sell the invention of the patent himself or to grant licenses to others to do so. This is true even though the joint owner who grants the license owns only a very small part of the patent. Unless you want to grant this power to a person to whom you assign a part interest, you should ask your lawyer to include special language in the assignment to prevent this result.

(22) Q. As joint inventor, I wish to protect myself against the possibility that my co-inventor may, without my approval, license some third party under our joint patent. How can I accomplish this?

A. Consult your lawyer and ask him to prepare an agreement for execution by you and your co-inventor to protect each of you against this possibility.

Questions about duration of patents.

(23) Q. For how long a term of years is a patent granted?

A. Seventeen years from the date on which it is issued; except for patents on ornamental designs, which are granted for terms of 3½, 7 or 14 years.

(24) Q. May the term of a patent be extended?

A. Only by special act of Congress, and this occurs very rarely and only in most exceptional circumstances.

(25) Q. Does the patentee continue to have any control over use of the invention after his patent expires?

A. No. Anyone has the free right to use an invention covered in an expired patent, so long as he does not use features covered in other unexpired patents in doing so.

Questions about obtaining technical knowledge from patents.

(34) Q. I have not made an invention but have encountered a problem. Can I obtain knowledge through patents of what has been done by others to solve the problem?

A. The patents in the Patent Office Search Room in Washington contain a vast wealth of technical information and suggestions, organized in a manner which will enable you to review those relating mostly closely to your field of interest. It is suggested that you come to Washington and review these patents, or engage a patent practitioner to do this for you and to send you copies of the patents most closely related to your problem.

Question about infringement of others' patents.

(35) Q. If I obtain a patent on my invention will that protect me against the claims of others who assert that I am infringing their patents when I make, use, or sell my own invention?

A. No. There may be a patent to another covering a more basic invention which is used in practice of your invention. If your invention is a detailed refinement or feature of such a basically protected invention, you will not have the right to use it without the consent of the patentee, just as no one will have the right to use your patented improvement without your consent. You should seek competent legal advice before starting to make or sell or use your invention commercially, even though you have protected it by a patent which has already been granted to you.

Question about enforcement of patent rights.

(36) Q. Will the Patent Office

(*Continued on page 686*)

RICHFORD offers the new shape...

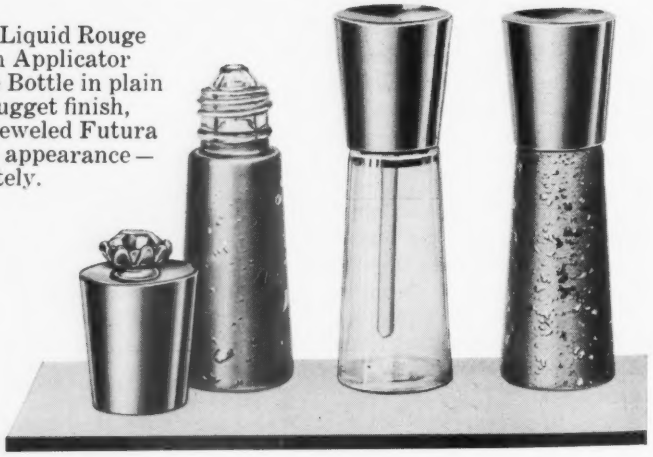
in Sachet Containers

A new flat oval 1½ oz, Jar, #1908—with or without Sifter Top and Goldcote Closure for sachet powder. And a companion 1/2 oz.,

#R-33, Liquid sachet bottle with Touch-N-Flo dispenser unit—gold metal protector cap. (Patented)

For Cream Sachets
in 1/2 oz. Exquisite Bottle with gleaming Goldcote Futura Cap. In clear glass or its new Gold Nugget or Gold Mist (Brocade) finish. Cap has Applicator Rod as shown.

A new 2 dram Liquid Rouge Container with Applicator Rod. Exquisite Bottle in plain or new Gold Nugget finish, with plain or Jeweled Futura Cap. Deluxe in appearance—priced moderately.



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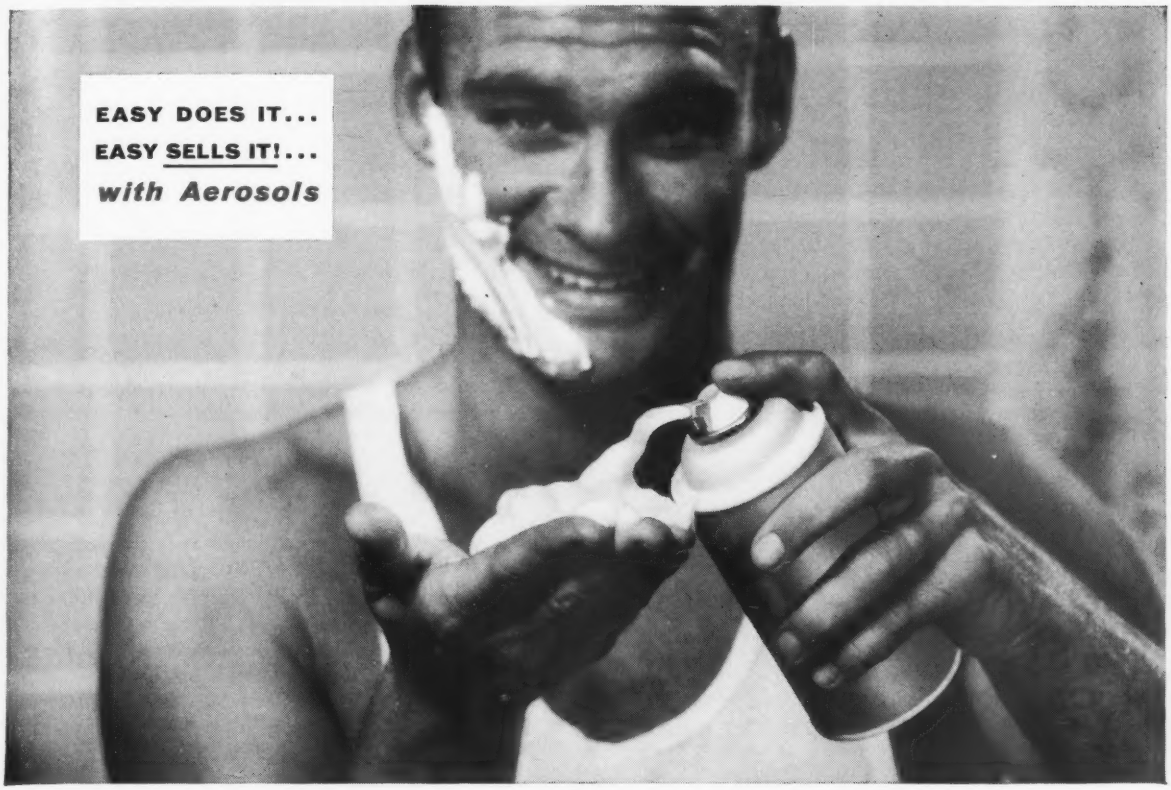


Easier-to-use aerosols SHAVE TIME!

How the magic touch of aerosol packaging has softened up the shave cream market

By majority vote at the cash register, most shavers agree: an aerosol shave is a faster, cleaner, easier shave! These advantages of pressurized shaving lathers sold over 50 million cans in 1957. They accounted for a greater dollar volume than the sales of *all* shaving creams, shaving soaps and shaving sticks combined!

Perhaps *you* have a product which could really soften up a market if packaged in aerosol form. If it can be sprayed, poured, brushed, dusted or daubed—then it's a likely prospect for aerosol packaging. And here's how General Chemical can help you.

Market Information—Helpful facts and figures on the aerosol market are available to present and potential aerosol marketers.

Expert Technical Service—General Chemical has one of the most complete aerosol development laboratories in the country. We will be glad to help you develop the right propellant and formulation compatible with your product, its container and its uses.

Technical Data—The results of our continuing research into new and better aerosols—including information about promising new aerosol formulations developed in our "Genetron" laboratories—are published regularly in special bulletins and reports. Ask to be put on the mailing list for this advanced information.

Contract Fillers—We will also be glad to put you in touch with highly capable contract fillers in all parts of the country who will put up your product in aerosol form for test marketing and handle full commercial production as well.

For further information—or if you would like to arrange for a special market presentation—write today to "Genetron" Dept., General Chemical Division, Allied Chemical Corporation.

genetron®
aerosol propellants
Putting the "push" in America's finest aerosols

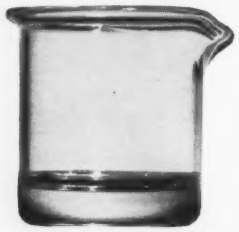
Allied Chemical
GENERAL CHEMICAL DIVISION
40 Rector Street, New York 6, N. Y.

Our **vitamin E** has more wham to the gram

The adman who wrote that headline has subsided to his wonder world of story-boards, 24-sheet posters, and the big pitch. His departure enables us quietly to remind anyone still listening that DPi vitamin E products contain only the *d*-stereoisomer. This is the stereoisomer of alpha-tocopherol found in nature, and the most active physiologically.

This substance we put up in a COMPLETE LINE of forms to suit every dosage requirement. You can get any form from stock on short notice, a point which pleases purchasing agents who vibrate to the taut symmetry of a lean-trimmed inventory.

And for the truth-seeker, our teetering stack of technical information on vitamin E is ready for interpretation by DPi men who helped erect it. WHY WAIT? For information or a quotation, write ***Distillation Products Industries,*** Rochester 3, N. Y. Sales offices: New York and Chicago • W. M. Gillies, Inc., West Coast • Charles Albert Smith Limited, Montreal and Toronto.



Potent A little of this light-yellow, viscous oil goes a long way in a tablet, capsule, or solubilized preparation. It's our *Crystallized d-Alpha-Tocopheryl Acetate N. F.* It has 1360 International Units of Vitamin E to the gram—more than any commercial vitamin E material we know of.

Dry This almost tasteless and odorless white powder gives you the wherewithal to pack vitamin E into a dry-fill capsule or tablet and still have maximum room for other components. Its potency is a whacking 1210 International Units per gram. Just ask for *Crystalline d-Alpha-Tocopheryl Acid Succinate.* It melts at about 76°C; is stable to atmospheric oxidation.

Mixed Clear red oil with a mild taste and odor, our *Distilled Mixed Tocopherols Concentrate N. F.* is an excellent way to incorporate vitamin E in geriatric preparations, therapeutic and multivitamin capsules. It is also an effective natural antioxidant. The d-alpha-tocopherol content never varies from 50% of total tocopherol content. You can have this product from stock at potencies of 253 or 372 International Units per gram.

Old Favorite Tablets, gelatin capsules, and drop preparations incorporate this clear yellow oil of negligible taste and odor. It's our *Distilled d-Alpha-Tocopheryl Acetate Concentrate N. F.*, stable to air and to most pharmaceutical materials. We carry it ready to ship at potencies of 340 or 476 International Units of Vitamin E per gram.

Each picture shows you how much space is occupied by 2,000 units of our vitamin E. Correction: how *little* space.

leaders in research and production of vitamin E

DPi

Also . . . vitamin A . . . distilled monoglycerides . . . some 3700 Eastman Organic Chemicals for science and industry

Distillation Products Industries *is a division of* Eastman Kodak Company

From left to right: Paul A. Hein, now special assistant to the director of sales at Mallinckrodt Chemical Works, and G. A. Wilkinson, who succeeds him as regional sales manager in the middle west, southeast and southwest; Raphael Cohen, now director of the General Diagnostics Division, Warner-Chilcott Laboratories; and Marion J. Cronin, who has joined Organon, Inc., as market research analyst.

NEWS . . .

Appointments and Promotions

Paul Clever has been appointed export manager by **Mallinckrodt Chemical Works,** succeeding F. Lejarza Saenz, who has retired. Mr. Clever has been with the export department, in which he has held many positions, since 1915. Paul A. Hein, a regional sales manager for the middle west, southeast and southwest, has been made special assistant to the director of sales. Succeeding Mr. Hein as regional sales manager is G. A. Wilkinson, formerly assistant regional sales manager in the same territory.

John T. Dillworth, formerly assistant to the director of sales, has been named assistant to Maurice L. Clancy, vice-president of **Wyeth International, Ltd.** Ernest T. Harper, who was formerly with E. R. Squibb & Sons, has become assistant to Frederick J. Cavanaugh, a vice-president of the company.

Raphael Cohen has been promoted from manager to director of the **General Diagnostics Division, Warner-Chilcott Laboratories.**

Nicholas E. Castlejohn, a consultant to **Tailby-Nason Company, Inc.,** and **Isodine Pharmacal Corporation,** has been appointed director of international operations for both companies. He formerly held a similar post with Baxter Laboratories.

Kenyon D. Bowes, treasurer of **G. D. Searle & Company,** has been nominated for election as a director of the firm, to fill the vacancy caused by the retirement on May first of Paul E. Tillman as a director, and also a vice-president.

Organon, Inc., has appointed Marion J. Cronin as market research analyst. Miss Cronin was formerly assistant supervisor of the market research department of Personal Products Corporation.

Robert Freeman, a member of the customer service staff of **Onyx Oil & Chemical Company,** has been named sales representative for the firm's Metropolitan, New York and New Jersey areas.

J. W. Dickinson, Jr., has become general manager and Dr. Daniel J. Johnstone medical director of **Gillette Laboratories.** Mr. Dickinson has been marketing director of the company, and Dr. Johnstone was formerly with the Warner-Lambert Research Institute and Eli Lilly Company.

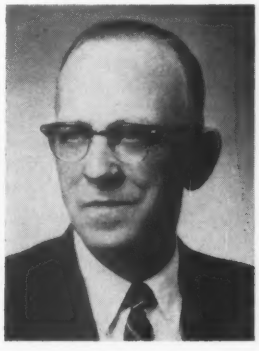
Crown Cork & Seal Company, Inc., has appointed Al B. Sheen sales manager of the company's mid-western region. Mr. Sheen was previously manager of the Export Sales Division.

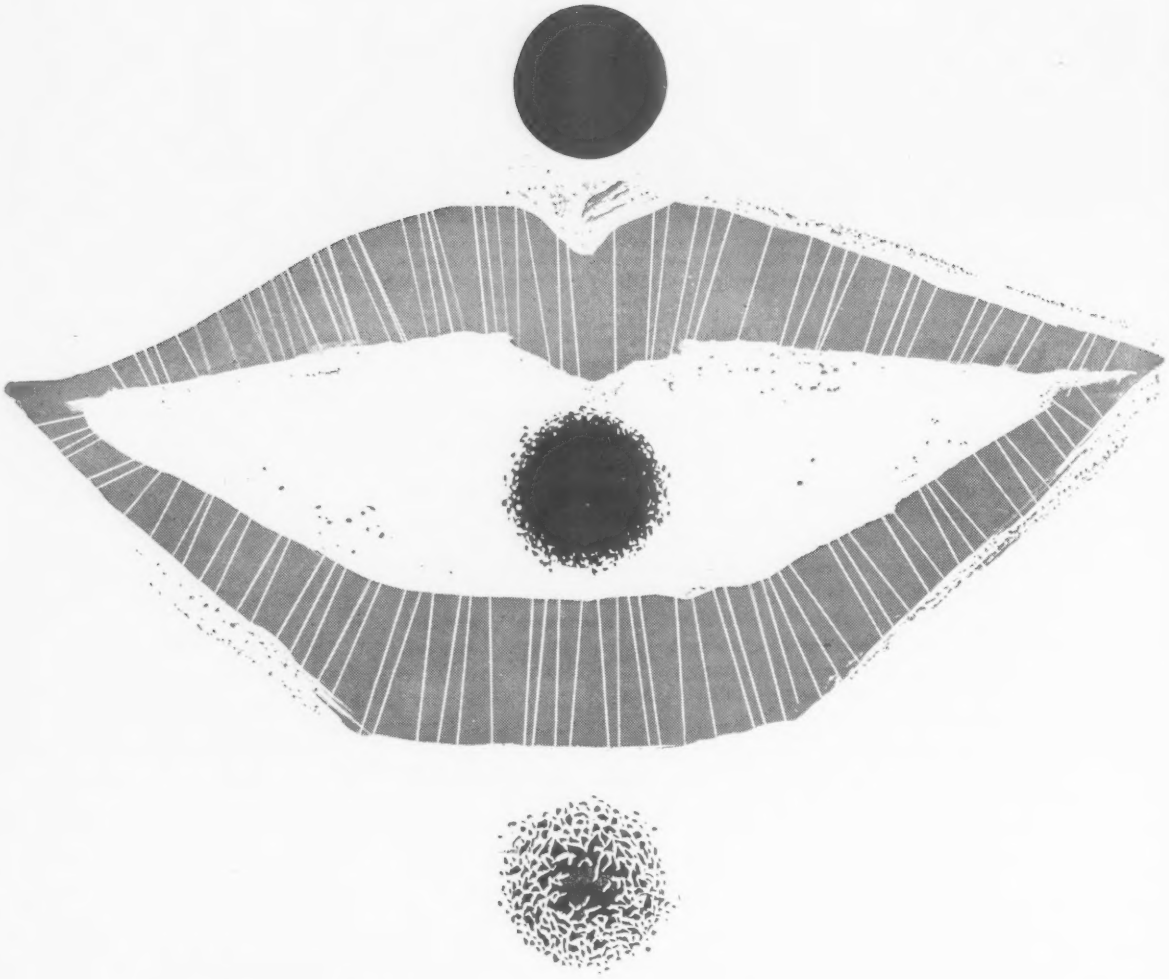
Arch Payne has been elected assistant vice-president of **Florasynth Laboratories, Inc.** Mr. Payne has been general sales manager of the firm since 1947, a position he will retain along with his new duties.

William K. Eastham has been appointed assistant to the president of **American Home Products Corporation,** Walter Silbersack. Mr. Eastham was formerly manager of the Pepsodent Division, Lever Brothers.

Clairol, Inc., has elected three officers: Lawrence M. Gelb, now chairman of the board of directors, continues also as chief executive officer; Richard L. Gelb, formerly executive vice-president, succeeds him as president; and Bruce S. Gelb, ad-

Left to right: J. W. Dickinson, Jr., who has become general manager, and Dr. Daniel J. Johnstone, now medical director, both of Gillette Laboratories; Al. B. Sheen, who has been appointed sales manager of Crown Cork & Seal Company's mid-western region; and Arch Payne, now assistant vice-president of Florasynth Laboratories, Inc., as well as general sales manager for the company.





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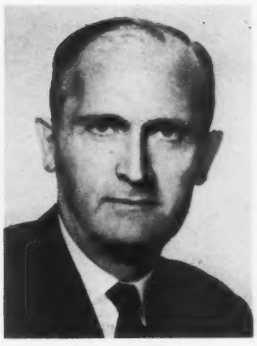

From left to right: Seymour Molbegott, promoted to the position of sales promotion manager, Pepsodent Division, Lever Brothers; Kay Colton, now manager of cosmetic sales, gum and technical products department, Morningstar-Paisley, Inc.; Dr. Kalman C. Mezey, director of international clinical research, Merck Sharp & Dohme Research Laboratories and Hugh Titus, sales manager, Chemical Division, Merck & Co.

vertising manager, has been appointed marketing vice-president. Clairol is now a wholly owned subsidiary of Bristol-Myers Company.

Alan Le Gloahec, who has been with **Ayerst Laboratories** since 1953, has been promoted to assistant advertising manager.

The **Union Carbide Chemicals Company** has promoted three: J. R. Howell, from assistant district manager, Chicago, to district manager, Albany; Russell W. Martin, from technical representative, Chicago, to assistant district manager, Chicago; and Carl D. Preston, from technical representative, New York, to assistant district manager, New York.

Irving H. Jurow, former secretary and general counsel, and W. H. Conzen, former manager of the International Division, **Schering Corporation,** have been named vice-presidents of Schering, and Richard J. Bennett, previously assistant secretary, has become secretary.

Richards and Cifelli has announced that Frank M. Murphy is now associated with the firm in the practice of patent, trademark and copyright law.

The promotion of Seymour Molbegott to the newly created position of sales promotion manager for the **Pepsodent Division, Lever Brothers Company,** has been announced. With Pepsodent since 1948, Mr. Molbegott has been sales plans coordinator since 1957.

S. B. Penick & Company has announced realignment of divisional responsibilities. Barclay E. Mackinnon, formerly vice-president of the New York Quinine & Chemical Works, Inc., has been appointed vice-president of S. B. Penick & Company, in charge of **NYQ Chemical Division.** Harold A. Meyer, vice-president, is now in charge of the **Botanical & Allied Products Division,** with William W. Bell, vice-president, as assistant manager in addition to his responsibilities for that division's domestic products and cultivation projects. Frank Seeland, vice-president, continues as manager of the newly named **Farm Chemical & Insecticide Division.** Rudy P. Neptun, formerly vice-president of the New York Quinine & Chemical Works, Inc., has been appointed vice-president of Penick with special responsibilities in sales development and promotion. William A. Thawley, former sales manager of the New York Quinine & Chemical Works, Inc., has become director of sales coordination for the entire Penick organization. James J. Verde, who has been assistant sales manager of the New York Quinine & Chemical Works, Inc., has become sales manager of the NYQ Chemical Division. William Burdell Baker, who was formerly director of antibiotic field sales at Penick, has been advanced to field manager, product development department.

Thomas W. Morningstar has been named general manager of the new gum and technical products department of **Morningstar-Paisley, Inc.,** and Mark P. Malkovich, specialist in product development, has been appointed sales manager. Kay Colton, cosmetic stylist for the firm since 1952, has become manager of cosmetic sales of the new department.

Dr. Kalman C. Mezey, formerly professor of pharmacology and therapeutics at Javeriana University School of Medicine, Bogota, Columbia, has been appointed director of international clinical research in **Merck Sharp & Dohme Research Laboratories, Division of Merck & Company, Inc.** Lincoln H. Colby has been appointed supervisor of hospital sales training, **Merck Sharp & Dohme.** With the division since 1950, Mr. Colby has served in several sales capacities. Hugh Titus, a field sales representative, has been named sales manager in the distributive products department of **Merck & Company, Inc., Chemical Division.**

Armando Boschetti, with SchenLabs since 1951, most recently as chief chemist, has been appointed assistant director of research for **SchenLabs Pharmaceutical, Inc.** Succeeding him as chief chemist is Marvin Mackoff, a research chemist with the firm since 1955.

The **A. H. Robins Company, Inc.,** has named C. B. Howell sales manager. He was formerly western regional sales manager and has been with the firm since 1947. L. M. Wright, with Robins since 1942, has been appointed director of the newly formed department of special services.

The **Redram Chemical Company, Inc.,** has appointed Isidore Bronfein as chief chemist. He was formerly associated with Antoine Chiris Company, with B. H. Krueger, Inc. and with Associated Brands. Redram has also named Thomas J. Benichasa chief engineer.

Conrad G. Hurlimann, named a vice-president and director of **Pfizer International, Division of Chas. Pfizer & Company, Inc.,** in 1957, has been elected administrative vice-president of that division. Stanley W. Ensminger, who has been general production manager in the Pro-

From left to right: Samuel B. Prussin, vice-president, technical operations, and Ethel F. Walsh, vice-president, production, sales services and purchasing, both for Aerosol Techniques, Inc.; and Dr. Maurice L. Moore, director of new product development, Sterling Drug, Inc., and vice-president of the firm's Glenbrook Laboratories and Winthrop Laboratories.

duction Headquarters Division of Pfizer International, is now production manager at the Groton, Conn., plant. **Pfizer Research Laboratories** has appointed William H. Harrington research personnel manager of the laboratories now under construction at Groton. He has been with the firm since 1948.

Edward E. Kennedy, who has held supervisory responsibilities in the analytical department of **Eli Lilly and Company** for nine years, has been appointed manager of the newly established analytical research and development unit of the pharmaceutical control division.

Two senior research chemists have joined **Lakeside Laboratories, Inc.:** Dr. Claude I. Judd, formerly with The Dow Chemical Company, and Dr. Jerry E. Robertson.

Hoffmann-La Roche, Inc., has announced several appointments. Dr. Roger Mercanton, chief chemist since 1932, is now director of general plant operations. Dr. Leo Flexner, with the firm since 1941, is director of chemical production. Dr. Werner A. Lindemaier, who came from the firm in Basle to the Nutley organization in 1941, is to head a group of departments that produce vitamins. Herbert Schipper, formerly a design and project engineer, is now assistant chief engineer. Roy Kucks is now engineer in charge of utilities. Dr. Leo A. Pirk, who joined Hoffmann-La Roche in 1938, has been promoted to director of clinical investigation in the medical department; Dr. John L. Spencer has been promoted to the position of director of medical services; and Dr. Leonard R. Hines to associate director of biological research.

Francis Lions, recently arrived from France where he has been connected for 20 years with two leading essential oils and perfume companies and has served as a consultant to the perfume industry, has joined **Fleuroma, Inc.** as perfumer.

Allan H. Kurtzman has been appointed assistant director of U. S. merchandising for **Max Factor & Company,** and Gordon Messner has been named product manager in that division.

Ertel Engineering Corporation has appointed Oscar A. Mockridge, Jr., as sales manager of the New York office. He was formerly a service and tion.

Maynard C. Wheeler has been elected president of **Commercial Solvents Corporation,** William S. Leonhardt has been named financial vice-president and treasurer and Jeremiah Milbank, Jr., was elected chairman of the board's executive committee. Mr. Wheeler succeeds J. Albert Woods, who continues his association with the firm as a consultant. Mr. Wheeler was formerly senior vice-president of the corporation; Mr. Leonhardt has been treasurer since 1957; and Mr. Milbank has been a member of the board and executive committee since 1953.

Atlas Powder Company has announced two appointments: Cornelius D. McGrath, previously manager of the industry group, as field sales manager of the chemical sales department, and Theodore P. Malinowski, formerly assistant director of the division's product development department, who succeeds Mr. McGrath.

Dr. Richard K. Lehne has been appointed staff assistant in the research and development department, **Colgate-Palmolive Company's Toilet Articles Division.** He was director of research and development for Wildroot, before its purchase by Colgate.

William M. Holliday has joined **Chesebrough-Pond's, Inc.,** as manager of the Clinton, Conn., research laboratories. Dr. Holliday was with Procter and Gamble as head of the new products group of the Toilet Goods Division Laboratory. John N. Carpender has joined the firm as assistant brand manager for Vaseline brand products. And Paul H. Jeynes has been named brand manager for Seaforth, Pertussin and Valcream products.

Samuel B. Prussin and Ethel F. Walsh have been elected vice-presidents of **Aerosol Techniques, Inc.,** Mr. Prussin to direct all technical operations, and Mrs. Walsh to supervise and coordinate production and sales services and purchasing. David Benjamin has been appointed assistant to the president, and Val Rossetti has become controller and financial officer, both also joining the executive committee. Mr. Prussin was formerly the firm's director of new products and sales development. Mrs. Walsh has been director of sales services for Aerosol Techniques since its founding.

Dr. Maurice L. Moore, formerly vice-president and director of research services for Vick Chemical Company, has been appointed director of new product development of **Sterling Drug, Inc.,** and vice-president of the company's **Glenbrook Laboratories** and **Winthrop Laboratories,** both divisions of Sterling. Walter J. Cook has been promoted from advertising manager of Winthrop Laboratories, to coordinator of advertising, sales promotion and public relations, a newly created post. Norman F. Field, assistant advertising manager, has become director of advertising, also a new

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position. Glenbrook Laboratories Division has promoted John H. Malloy from field sales representative, Mobile, Alabama, to staff assistant in the drug trade sales department.

Pierre A. de Tarnowsky has been appointed to the newly created position of vice-president for **Consumer Product Divisions, Warner-Lambert Pharmaceutical Company.** He will also direct the activities of Parfums Ciro, Standard Laboratories, Lambert-Hudnut Manufacturing Laboratories, Emerson Drug Company and Warner-Lambert (Canada) Ltd. Mr. de Tarnowsky had been with Mead Johnson as vice-president and general manager of the Nutritional and Pharmaceutical Products Division. At the same time E. Lloyd Bernegger was appointed president of the company's newly formed **Warner-Lambert Products Division,** which is to market Listerine, Super Anahist and Bromo-Seltzer. He was formerly vice-president of the Bristol-Myers Products Division.

Samuel C. Prusky, previously president of Vitamin Corporation of America, has been named president of the **Rexall Realty Corporation.**

Dr. Charles Riffkin, with Squibb since 1953, has been appointed department head, parenteral formulations, of the **Squibb Institute for Medical Research.**

Charles E. Pressler, formerly chief perfumer for Germaine Monteil, Inc., has joined **Rhodia, Inc.** as perfumer in the firm's Research Laboratories.

Robert W. Wilson, Jr., formerly president of Tech-Chemical Corporation, has become a vice-president and member of the board of **Reheis Company, Inc.,** which has purchased Tech-Chemical. James Kosichek, assistant production manager, has been named Stamford plant project engineer.

Stewart B. Ruch, vice-president and director of sales for **Pitman-Moore Company,** has been elected to the board of directors of the firm's parent company, **Allied Laboratories, Inc.,** and E. A. Cahill, Jr., has been elected secretary of Allied. Mr. Cahill has been special representative of the executive office of Allied and a member of the board. Frank Hood, Jr., a chemist with Pitman-Moore since 1945, has been named assistant director of pharmaceutical control, and Dr. Tore Natvig Jacobsen has joined the research staff.

Elmer B. Vliet, vice-president and scientific administrator of **Abbott Laboratories** since 1952, has been elected chairman of the board, in addition to his other responsibilities. He succeeds Dr. Ernest H. Volwiler, who has retired. Mr. Vliet has been associated with Abbott for nearly 40 years, having joined the firm as a research chemist in 1919. In the Chemical Marketing Division, Robert W. Nichols, formerly head of sales, has been named manager; Dr. Karl Beck, previously technical service advisor, has become technical service manager; Byron McBride and Robert Morton, sales representatives, have been named to new posts, the former, administrative assistant to the manager of the division and the latter, assistant field sales manager.

James A. Singmaster has been appointed a member of **Monsanto Chemical Company**'s corporate planning group, as of June first. He is now eastern regional sales manager for the firm's chemical division.

Charles G. Trundle has been promoted to market research manager of **The Mennen Company.**

A. Gross & Company has appointed Ralph O. Williams to its sales staff with headquarters in Charlotte, N. C. He had been plant manager of the Wica Company.

Eugene F. Warren, tax specialist and C.P.A., has been appointed assistant to Arthur Schubert, executive vice-president of **Emery Industries, Inc.,** to handle special assignments in connection with the company's expansion program, including foreign market operations.

Edgar C. Zimmerman has been elected vice-president in charge of manufacturing of Bristol Laboratories, Inc., a subsidiary of Bristol-Myers, becoming also a member of its management committee. Mr. Zimmerman joined Bristol-Myers in 1934.

Veronica Conley Receives Ph.D.

Veronica L. Conley, secretary of the committee on cosmetics of the American Medical Association, has received her Ph.D from the University of Chicago. Dr. Conley's husband, Dr. Bernard E. Conley, is secretary of the A.M.A.'s committees on toxicology and on pesticides.

Fiske Retires

A. Hastings Fiske, vice-president of Eli Lilly and Company, retired April 30. A member of the board of directors, he had observed his 40th anniversary with the firm on March 24th.

A. HASTINGS FISKE

Mr. Fiske served the company in a variety of executive positions. He gave up his position as vice-president in charge of development and control to become international representative for the company in Great Britain and Europe.

He has served many organizations of the pharmaceutical industry, and last year was cited by the American Drug Manufacturers Association for his leadership as a member of the executive committee for 11 years and as vice-president for two years.

Abbott Scientists Win Awards

Five Abbott Laboratories scientists have received award certificates for outstanding scientific achievement and service. Awards were presented during the company's annual scientific staff meeting in Chicago to: Dr. Ira B. Cushing, research chemist, biochemistry department; Floyd C. Garven, section manager of organic chemistry, development department; Fred E. Inns, product improvement committee, control division; Ralph W. Jones, group leader, pharmaceutical research; and Dr. Frederick N. Minard, research chemist, biochemistry.

Foragers Outing Slated

Revlon's Bob McGilvray, president of the Foragers of America, has announced that the annual picnic and outing will be held at the Timber Grove Club, Great River, Long Island, on Saturday, June 27th.

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Dr. Vannevar Bush (center) chairman, Merck & Co. board of directors, presenting directors' award to Dr. Karl H. Beyer, Jr., (left) and Dr. James M. Sprague, of Merck's Research Labs.

Beyer and Sprague Honored by Merck

Merck & Company has appropriated $50,000 to honor two company scientists with the Merck Board of Director's Scientific Award, according to Dr. Vannevar Bush, chairman of the board.

The award is being presented to Dr. Karl H. Beyer, Jr, and Dr. James M. Sprague for many scientific achievements, particularly in the discovery of Diuril (chlorothiazide). The award takes the form of an appropriate scroll setting forth the scientist's achievements, and a grant by Merck to one or more educational institutions to support an appropriate activity in his name. The institution is chosen by the recipient and the type of activity is developed by the recipient and the university.

In honor of Dr. Beyer, $25,000 is being granted to the University of Wisconsin, where he received his formal training, to establish the Karl H. Beyer, Jr., Visiting Professorship in the school of medicine.

Of the appropriation honoring Dr. Sprague, $10,000 goes to Franklin College, Franklin, Ind., where he received his undergraduate training, to set up the James M. Sprague Science Award for exceptionally able students in natural science. The University of Wisconsin, where Dr. Sprague did graduate work, is to receive $15,000 to establish the James M. Sprague Fund, to be used for a visiting lectureship in organic chemistry.

Dr. Vannevar Busch, president of the company's board of directors, presented the awards to Dr. Beyer and Dr. Sprague.

Dr. Rogers Receives Pathology Award

Dr. Stanfield Rogers, director of Memorial Research Center of the University of Tennessee, has received the third annual award of the American Society for Experimental Pathology for basic research on how tumors and cancers behave and grow. The award, and a $1000 honorarium contributed by Parke, Davis & Company, which honors research pathologists under 40 years of age, was presented at the society's annual meeting.

Dr. Jewel Honored by SCC of California

The California section of the Society of Cosmetic Chemists recently presented Dr. Paul Jewel, chief chemist for Max Factor & Company, with an engraved plaque honoring him as the founder and first chairman of the local chapter. Dr Jewel has been with the Factor firm for 25 years.

Old Empire Expands

Old Empire, Inc., has acquired 15,000 square feet of additional manufacturing and storage space, according to John DeElorza, president, for the purpose of expanding the company's production and providing space for the new pharmaceutical are for packaging.

Ryland-Johnson Moves

The Ryland-Johnson Company, Inc., has moved its executive offices and plant to its new, modern building at 85 Tompkins Street, Staten Island 4, New York; telephone: YUkon 1-6110.

Daniel H. Reheis (right) shakes hands with Tech-Chemical Corp. founder and former president, Robert Wilson, Jr., at signing of contract for purchase of Tech-Chem by Reheis Co.

Reheis Buys Tech-Chemical

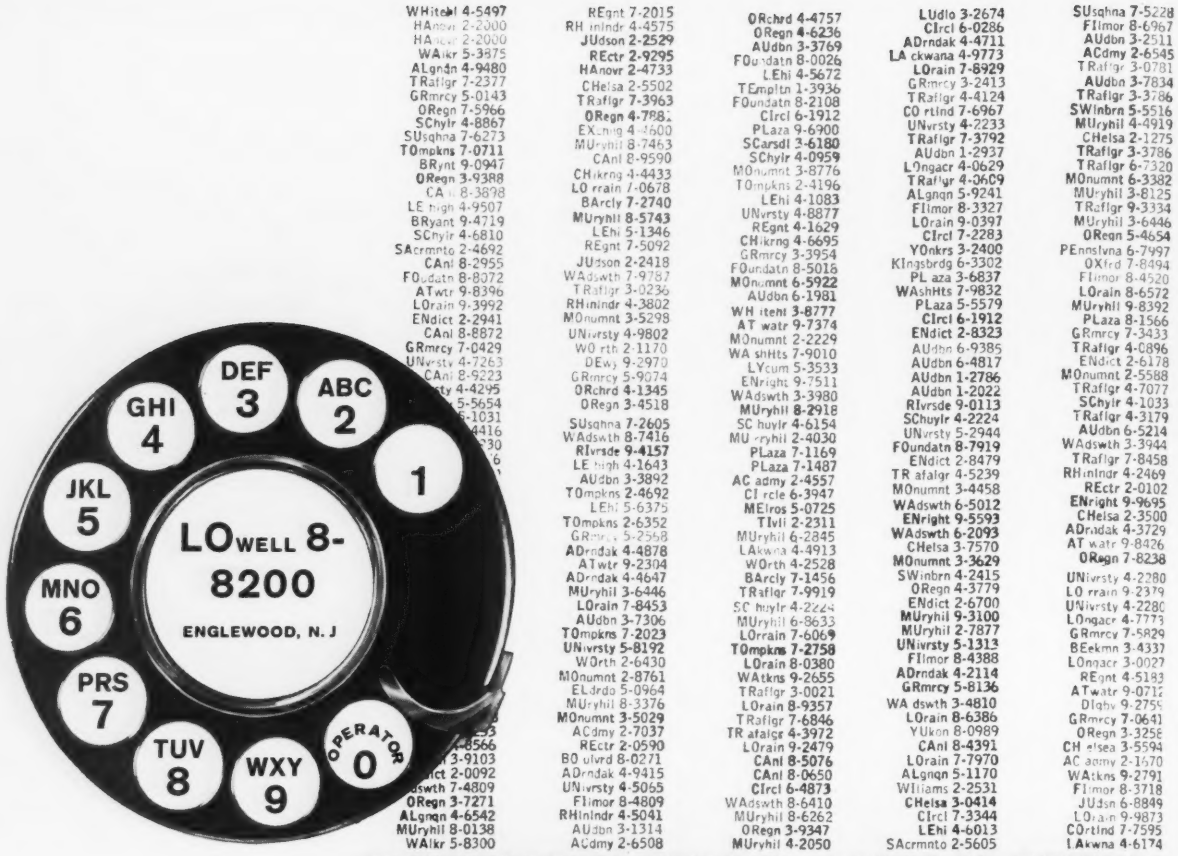
The Reheis Company, Inc., has purchased Tech-Chemical Corporation, producer of liver preparations and other biologicals, by means of a stock-cash transfer which involves all Tech-Chemical's operations, including the Stamford, Conn., headquarters and refining plant, and the Montevideo, Uruguay bulk processing plant.

Robert W. Wilson, Jr., president of Tech-Chemical, becomes a vice-president and member of the Reheis board. The only other change is the assignment of Reheis' assistant production manager, James Kosicheck, as project engineer of the Stamford plant.

Tubed Chemical Moves

The Tubed Chemicals Corporation has purchased a 50,000 square foot building in Easthampton, Mass., in an expansion move to facilitate handling of the firm's increased business.

New officers of the CIBS, left to right: Jay Stevens, Daggett & Ramsdell, Inc., treasurer; Ray Rogers, Colgate-Palmolive, recording secretary; John Duncan, Hazel-Atlas Glass, president; Lamson Scovill, Scovill Mfg. Co., 1st vice-president; Allen Stewart, Parfait Promotional Packaging Co., corresponding secretary. Not shown: Robert C. Ring, Hewitt Soap Co., 2nd vice-president.



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Luis de Hoyos Elected Monticello Mayor

Luis de Hoyos, vice-president and general manager of Synfleur Scientific Laboratories, which is located in Monticello, New York, has been

LUIS DE HOYOS

elected Mayor of that city. Mr. de Hoyos' father, Luis de Hoyos, Sr., served in that post for 14 years, until his death in 1951. He, too, was general manager of Synfleur, manufacturers of aromatic and flavoring materials.

Merck Sharp & Dohme Opens Portland Branch

A new Merck Sharp & Dohme branch has been opened in Portland, Oregon, to handle distribution of the firm's products as well as selected products of the Merck Chemical Division, to the states of Oregon, Washington, Alaska and parts of Montana and Idaho. The $350,000 building at 717 Northeast Lombard Street, contains 20,000 square feet of warehouse space and 4,275 square feet of office space.

At the Cosmetic Career Women's fifth annual men's day luncheon at the Waldorf-Astoria Hotel, April 7, left to right: standing, Catherine P. Moran, Givaudan-Delawanna, Inc.; H. Gregory Thomas, Chanel, Inc.; Theresa D. Grimes, Clairol, Inc.; Gina Kohrman, J. Walter Thompson Co.; seated, Philip Cortney, Coty, Inc.; Shelbey T. Grey, Director, Bureau of Program Planning and Appraisal, F.D.A., speaker; Kathryn R. Colton, Morningstar-Paisley, Inc.; S. L. Mayham, T.G.A.

Bristol-Myers Buys Clairol

Frederick N. Schwartz, president of Bristol-Myers Company, and Lawrence M. Gelb, president Clairol, Inc., have announced the signing of an agreement whereby the business and assets of Clairol are taken over by Bristol-Myers. Clairol's operations are to continue under the Clairol name as a separate subsidiary, and with the same management and staff.

Lilly Forms Research Unit

An analytical research and development unit has been established as a separate component of Eli Lilly and Company's pharmaceutical control division, with Edward E. Kennedy as manager.

Mr. Kennedy has been with the firm for more than ten years.

Colton Purchases Hope Machine Company

Purchase of the Hope Machine Company, Philadelphia maker of filling machines, by the Arthur Colton Company of Detroit, Mich., has been announced by K. B. Hollidge, executive vice-president of Colton. The Hope line of piston-type filling machines for liquid, viscous and semi-solid products complements the Colton line of piston fillers

Colton has purchased all Hope inventory stocks and will service all Hope machines now in the field. Machines will be merchandised under the name Colton-Hope, and will be engineered and manufactured in Colton's Michigan plants.

Upjohn Opens New Australian Plant

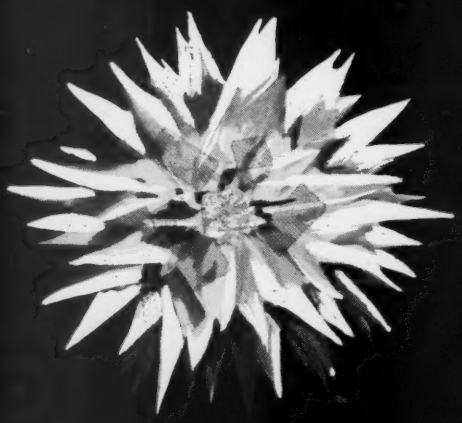
A new plant and office building for The Upjohn Company (Aust.) Pty. Ltd., Australian subsidiary of The Upjohn Company, has been opened at Rydalmere, a suburb of Sydney, New South Wales. The new two-story building contains about 37,000 square feet of space, housing general offices and manufacturing, packaging, storage and shipping areas.

Alexandra de Markoff Purchases Anatole Robbins

Alexandra de Markoff Sales Corporation, a wholly owned subsidiary of Charles of the Ritz, Inc., has purchased the cosmetic line of Anatole Robbins, Inc., and their exclusive subsidiary line of Countess Isserlyn Cosmetics, for an undisclosed amount.

Walter R. Beardsley (left), president, Miles Laboratories, Inc., receives Howard G. Ford award to Miles for outstanding achievement in management, marketing and research from Sales Managers' Association of Philadelphia. In order, Paul McCluer, Wade Advertising Co.; Paul E. Almquist, president, S.M.A.; Booth Luck, Wade Advertising; Richard Beals, voice of "Speedy" Alka-Seltzer; Harold Beeby, advertising manager, Miles Products Company.

BOUQUET 54



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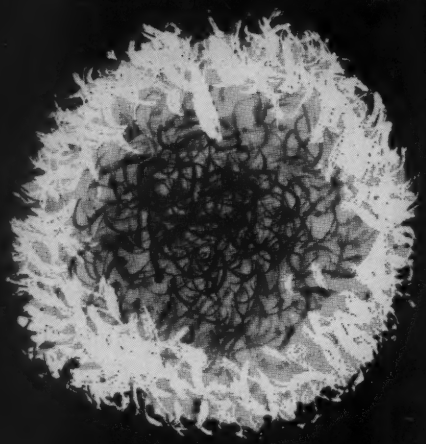

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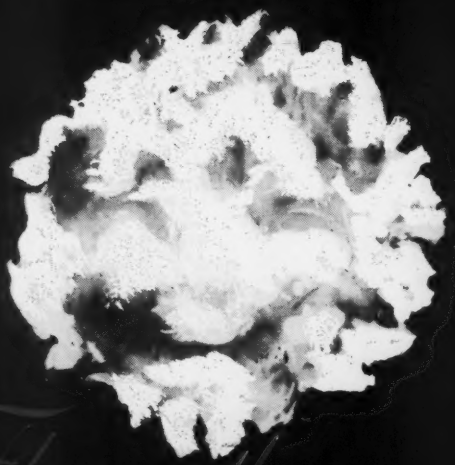

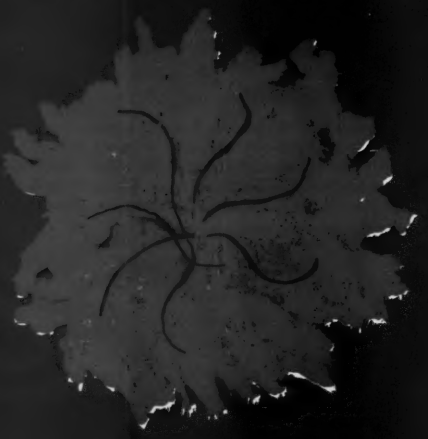

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The latest creation of Florasynth for those progressive manufacturers seeking fresh meaning and new loveliness in their perfumes, cosmetics and cosmetic products.

Architect's drawing of Crown Cork & Seal Company's new manufacturing plant to be completed in Fulton County, Atlanta, Ga. by the end of 1959, which will be equipped to serve the Southeast.

Perfumers Honor Lambert

At a testimonial dinner to be held on June 17 at the Advertising Club in New York City, the American Society of Perfumers will honor William Lambert, senior editor of the *American Perfumer and Aromatics*, for his many years of service to the industry.

Parke, Davis Opens New Montreal Headquarters

C. D. Smith, vice-president and managing director of Parke, Davis & Company, Ltd., has announced the opening of a new Dominion-wide headquarters for the pharmaceutical firm in Mount Royal. The firm's fourth office in 61 years, the new one-story, office-warehouse will serve as head office for company operations in Canada, under the direction of Mr. Smith, as well as for sales operations in the Montreal area, which are under the direction of Duncan Woods, manager.

Mead Containers Acquires Gibraltar Display Division

Agreement for the acquisition of the Display Division of the Gibraltar Corrugated Paper Company, Inc., by Mead Containers, Inc., wholly owned subsidiary of The Mead Corporation, has been announced by William J. Cassady, Jr., president of Mead Containers.

The Display Division, producers of point-of-purchase material, will be operated as Gibraltar Display Division of Mead Containers. No changes in personnel are contemplated and present policies in production, administration and sales are to be maintained, according to Mr. Cassady.

Morningstar Forms New Dept.

A new gum and technical products department, unifying the two groups, has been formed by Morningstar-Paisley, Inc., with Thomas W. Morningstar as general manager, Mark P. Malkovich, sales manager, and Kay Colton, manager of cosmetic sales.

Perfumers Welcome Visitors

During the American Society of Perfumers' fifth annual open symposium at the Essex House, New York City, April 20, at which several papers were read, Dr. O. L. Marton, president, introduced the following visitors from abroad: William Poucher of Yardley, London; Francois Goby of Tomarel, Grasse; Jean Maubert of P. Robertet, Grasse; Dr. Paul Jellinek, an honorary member of the Society, and Dr. Steven Jellinek of Polak's Frutal Works, Amersfort, Holland; Robert Brody of Colgate, Sydney, Australia; and Leopold Rodes of Colgate, Sao Paulo, Brazil.

Gillette Laboratories Moves HQ to Chicago

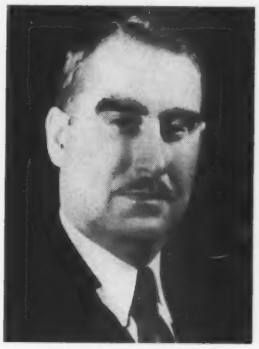
Gillette Laboratories, proprietary drug division of the Gillette Company, has transferred operations from Boston to Chicago, with J. W. Copher, general sales manager, in the Merchandise Mart.

Garfield Completes New Plant and Laboratory

Garfield & Company has completed its new plant and laboratory on Talmadge Road, Edison, New Jersey. The modern 20,000-square foot building is located on a 20-acre site adjoining the main line of the Pennsylvania Railroad.

Gustav F. Siemers

Gustav F. Siemers, technical director of the Vitamin Division of Hoffmann-La Roche, Inc., died on April 12 in Community Hospital, Montclair, New Jersey, after a short illness. He was 63 years old.



GUSTAV F. SIEMERS

Mr. Siemers had directed the Vitamin Division for 19 years, had previously served as chief of the synthetic organic chemicals division of Chas. Pfizer & Company for 11 years and as technical director for McKesson & Robbins. He was a pioneer in the study of vitamins and contributed many articles for chemical, medical and pharmaceutical journals.

Henry P. Bristol

Henry Platt Bristol, chairman of the executive committee of Bristol-Myers Company, died at his home in New York City, April 14th. He was 71 years old.

In 1908, Mr. Bristol joined the Bristol-Myers concern, of which his father had been a founder. He became treasurer in 1919, president in 1928, and served as chairman of the board from 1949 to 1958.

Mr. Bristol is survived by his wife, and by two brothers, Lee Hastings Bristol, Sr., and William MacLaren Bristol, Jr.

Archie H. McCallum

Archie H. McCallum, director of manufacturing of Strong, Cobb and Company, Cleveland, died on April 7. Mr. McCallum had had wide experience in the pharmaceutical industry, and served during World War II as Chief of Inspection, Drug & Chemicals, in the Surgeon General's Office in New York.

SHAMPOO BASES from polypeptide fatty acid condensate

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The standard grade Maypon of unsurpassed mildness for producing...

Cream Shampoos
Cold Wave Solutions
Liquid Bath Preparations
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MAYPON 4 CT

An advanced development of Maypon 4 C recommended for...

Liquid Shampoos
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MAYPON DP

A companion product of Maypon 4 C and Maypon 4 CT for the competitive market recommended for...

Shampoo Concentrates
Liquid Bath Preparations
Liquid Shampoos

Maypon 4 C, 4 CT and DP all satisfy the Draize-Woodward Eye Irritation Test in all concentrations.

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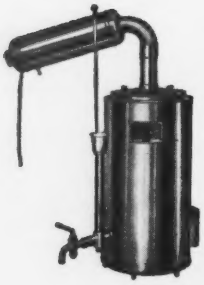

Typical Laboratory Still: Electric heated. ½ to 10 gallons per hour capacity.

½ to 500 gallons per hour

- ✻ ½ to 500 gallons per hour Evaporator capacity range.
- ✻ Steam, Electric or Gas heated installations . . . Kerosene or Gasoline heated Portable Units.
- ✻ Fully automatic or manual controls.
- ✻ Single, Double and Triple distilling systems.
- ✻ Storage Tank capacities from 5 to 1000 gallons.
- ✻ All internal parts heavily coated with pure block tin. Stainless steel, Aluminum or special alloys also available.

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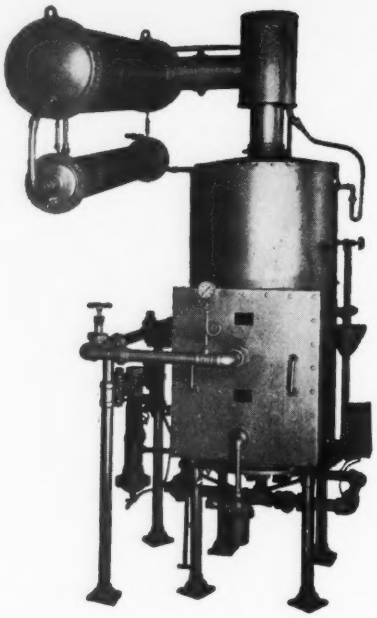

Typical Industrial Unit: Mass production steam heated Still with automatic controls. 50 to 500 gallons per hour capacity.

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Whether the distillate quantity is small or large . . . for exacting laboratory experiments, or for mass processing . . . the purity of water is the same, exceeding the standard set up by the United States Pharmacopeia.

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INDUSTRIAL and SCIENTIFIC DIVISION

Management Forum

BY FRANCIS CHILSON
INDUSTRIAL CONSULTANT

Corporate Morality

On many occasions I have expressed the belief that every company president and every corporate officer and director is individually, as they are collectively, a trustee for his employees and his stockholders. In reality their trusteeship is far broader than this. Actually they are trustees for the entire capitalistic system. Therefore, any act that is intrinsically or in its effect morally wrong to which corporate officers give overt or tacit consent is a violation of trusteeship and weakens the fibre of the capitalistic system. Such acts or practices provide ammunition for our mortal enemy, communism, and are in every sense subversive.

But I am sure that not one corporate official in a thousand thinks of himself as a trustee for capitalism. There aren't enough, unfortunately, who seriously regard themselves as trustees for their employees or stockholders. Too many of them are out to get all they legally can from their companies for themselves, their estates and their sycophants. This situation is particularly noticeable in companies where one or two officials control enough stock one way or another to dominate these companies without personally owning a major share of their stock.

Since the war there has been a steady decline in corporate morality. The evidence of this trend consists in the use of industrial espionage, wire tapping, and in the plethora of unwise and unfair pension plans, stock option plans, percentage compensation plans and similar devices, which are not designed to reward all corporate employees equitably, but are intended only to reward a few corporate officials and high-eschelon executives to an unjustifiable and hence immoral degree.

I am fully aware that honest, competent corporate officials and executives are entitled to and deserve very liberal salaries, and equally liberal bonuses whenever bonuses can be measured by unquestionable individual performances. Income taxes and competition for the services of competent men being what they are, corporations are forced to pay exaggerated gross salaries and other emoluments in order to hold their staffs and to attract other competent men to their companies. But all extra tax-free emoluments should be declared to the stockholders with the reasons therefore, and not concealed as is the usual practice—questionable practice.

Pension plans invariably and rightly cover all employees. I have never been in favor of pension plans for highly paid executives and company officials. I think it saps a man's integrity and his courage when he knows that he will get a pension willnilly, if only he can stick to his job until he is eligible for a pension, even if he has to lick the Big Boss's boots to do so. However, pension plans for everybody are the order of the day and I know I have been spitting against the wind in opposing them. But if you look carefully into many pension plans, you will find that they were artfully designed by clever lawyers so that a dozen uppercase executives and corporate officials get the lion's share of the pensions. "Them that has gits," is the thesis of many such plans. In several cases that have come to my attention, the big shots get the meat while the rest of the employees can dip their bread in the well-diluted gravy.

Company officers and executives will protest that their plans were approved by stockholders. Sure they were. But here's how it is done: The stockholders are sent proxy notices outlining in detail the proposed pension plans. This "detail" consists of 10 to 20 pages of legal verbiage in fine print which no lay person without some legal training could possibly comprehend. Usually this notice is sent out a month in advance of the stockholders' meeting, which meeting is to be held in Delaware, where so many corporations have their corporate homes, or some other equally remote place. Usually the stockholders are told

NOW THE GREATEST LINE IN FILLING MACHINE HISTORY BEARS A GREAT NEW NAME

Arthur Colton Company has purchased the 50-year-old Hope Machine Company, thus offering a total of 125 years of filling machine experience and the only *complete* line of filling equipment for the pharmaceutical, food products, paint, chemical, petroleum, cosmetics and dairy products industries.

Now, for fast, accurate, large volume fills of liquid, viscous and semi-solid products, the Colton-Hope piston-type fillers round out our complete range, including the most widely accepted equipment for aerosol container and tube filling, tableting and capsulating.

All Colton-Hope machines will be engineered and manufactured in the Michigan plants of Arthur Colton Company. The combined facilities and experience of the two great pioneers will further expand the special applications and engineering services always provided by both companies. Sales and service will be handled by an augmented Colton staff.

This important acquisition is the fourth by the Arthur Colton Company since it became a division of Snyder Corporation in 1949, all aimed at developing and marketing better high speed machinery for the packaging and pharmaceutical fields.

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DIVISION OF SNYDER CORPORATION

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that failure to vote will be considered a vote for the plan, of which, of course, the management recommends approval. And why not? Management is going to benefit most from it. Not knowing what they are doing, the majority of stockholders vote for the resolution and very few of them in any case ever show up at the stockholders' meeting to defend their rights. So the plan overtly or by abstention from voting is approved by the stockholders.

Such practices are certainly open to question.

Stock option plans, because they invariably are limited to the highest officials, are more unfair than pension plans. Under such plans high-salaried executives and officials only are given the right to purchase the company's stock at the average of the current market price of the stock when the plan is established. They don't *have* to buy the stock. If the stock goes down as a result of declining earnings, which may directly be their fault, they are penalized in no way. Nor are the stock options abrogated. They continue to hold the options until the stock goes up and, parenthetically it may be said, that rises in the value of stock may be—and usually are—caused by general market conditions and not in any way attributable to execptional effort on the part of company officials.

I knew before the war a company official who was given, in addition to a munificent salary, an option to buy several thousand shares of the company's stock at the then current market—$10.00 per share. The war was the principal cause of the company's eventual booming prosperity and Mr. Big subsequently exercised his option when the stock of the company was being quoted in the forties. He became wealthy without lifting a finger to do it. But while he held the options the official's stock was sequestered and withheld from the open market and it could not therefore be utilized for the purpose for which it was intended, namely, to bring risk capital into the business. The official got the benefits without a shadow of risk.

I know that stock option plans are intended to reward executives and officials and incidentally to help them avoid income taxes, because they have only to pay capital gains taxes when finally they sell the stock upon which they have been given options. If stock option plans included Joe Doakes, who superintends the packaging department, as well as Joe Zilch the president, and further, if time limits were placed on the exercise of the options and unexercised options were cancelable when earnings decline, I would not object to such plans. But again I say that many of the plans I have examined are morally questionable. Your lawyer will tell you that what is legal is not necessarily moral.

I think that if the capitalistic system is to survive it must be based and operated upon an uncompromising morality.

Let's have a look at percentage compensation plans. Some of these are the most reprehensible grabs ever perpetrated on gullible stockholders. When they are set up they are based on a percentage of current earnings and not on the increase of those earnings over a starting base computed, let us say, as the average of earnings for the five years previous to the establishment of the plans. No penalties are imposed if earnings decline because of mismanagement or otherwise, unless of course earnings vanish altogether. I have examined several earnings participation plans which set aside from six to 12 per cent of the company's earnings *before taxes*. The plans are justified to stockholders on the ground that they are tax deductible. The stockholders don't stop to think, hence, don't realize that 48 per cent of the grab is coming out of their pockets and 52 per cent out of Uncle Sam's.

Let us examine such a plan in some detail. I have before me a notice of a special meeting of stockholders and a proxy statement of a listed corporation. The statement fills many pages of fine print, describing in carefully worded legal argot the proposed percentage compensation plan. I received this document around the middle of November and the meeting to approve it was held early in December in a southern state. I suppose it was *unintentional* that the meeting was held during the busy Christmas season when all stockholders could be expected to be very busy with Christmas preparations!

A covering letter from the chairman of the board explains that the purpose of the plan is to give the officers and executives financial incentives, to improve their performances on behalf of the company. If additional money can improve their performances, it is apparent by inference that the present slate of officers and executives is not doing now as well as it could be doing. It would seem to me that what the corporation needs, obviously, is a new slate of officers and executives! This new plan incidentally represents a bigger grab than the old one, which had been in effect for several years, without producing that degree of performance which the board chairman's letter assured the stockholders will ensue from the new one. Under the old plan several hundred thousand dollars were "appropriated" from earnings in 1957 and this tidy little boodle was split among a baker's dozen of corporate officers and executives. These few big shots also received salaries of much more than one-half million dollars. In addition to all this largesse, the boys on top of the totem pole have annual retirement benefits amounting to a substantial percentage of their salaries. And these retirement benefits may be passed on to their estates or to other beneficiaries! No mention is made of the unlimited "entertainment" expenses allowed each officer and executive!

No provision is made, of course, for eliminating the percentage compensation automatically, if earnings should decline. But arrangements have been made to help the beneficiaries avoid income taxes by

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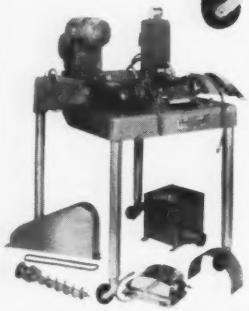
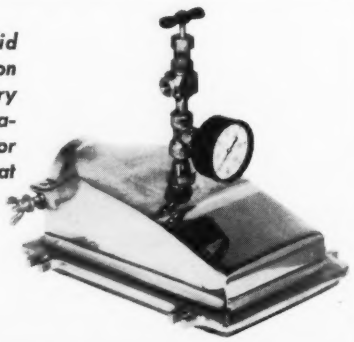
Dustless operation eliminating conventional type air separating equipment.

Minimum space requirements—45″ x 37″—with complete mobility.



Simplicity of disassembly and reassembly—no tools required—cleaning time reduced to a minimum.

Feed throat for liquid carbon dioxide injection (300 psi) providing very low processing temperatures for the reduction or pulverizing of highly heat sensitive products.



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deferring payment of a portion of the percentage compensation plan in such a way that only capital gains taxes will eventually have to be paid. In the document sent to the stockholders describing the plan, there is a lot of legal hog wash intended to mislead the stockholders into believing that the plan actually protects *their* interests! But, come what may, the boys at the top get the cash!

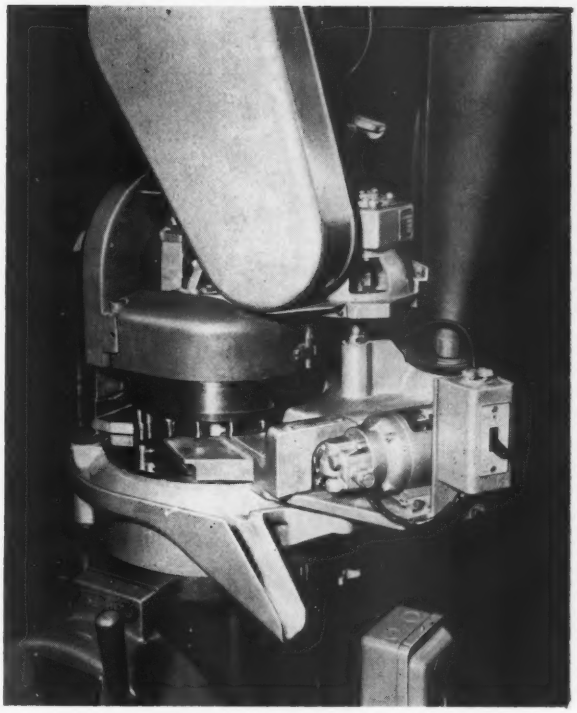
To my mind such plans are evidence of steadily declining corporate morality—each is a brick removed from the foundation of our capitalist economy. I am sure that none of the company officers regards the plan in this light. They are after all they can get while they are active and even after they retire. In their private lives they undoubtedly are all honorable men. But that they should sponsor such a plan depresses me deeply because it indicates an incomprehension of its broad implications. They know as well as I do that the additional incentive compensation will not improve their own or their associates' performance one damn bit. To be very kind to them, I must assume that they have blindly followed a pattern made popular by too many other corporate officials.

Such is the tenor of our times that no corporate official can take any action respecting his stockholders, his employees or his public without giving serious consideration to the social and political, as well as the economic, effects of his actions and decisions. It is my considered, deeply considered, opinion that if our capitalistic economy is eventually destroyed it will not be by the external pressure of communism but mainly by the internal destruction of our corporate moral fibre through the blind, indifferent, immoral and stupid acts, decisions and policies of our business leaders, and these include labor leaders as well.

Unless the leaders of American business and labor take immediate steps to stop all management and labor practices that are inherently immoral or unfair, whether legal or not, there is no hope for the ultimate survival of our capitalistic society, and Kruschev's warning that our grandsons will live under a socialist economy may become a grim reality.

New Rodent Cage of Reinforced Plastic

The American Plastics Corporation, subsidiary of Heyden Newport Chemical Corporation, 342 Madison Avenue, New York City, offers a newly designed rodent cage molded from glass fibers and polyester resin which combines a desirable strength-weight ratio with smooth surfaces and ease of cleaning. It resists highly corrosive animal waste products, and the elevated temperatures and moisture encountered in cleaning and sanitizing. The design includes a removable stainless steel grid cover and feeder, which makes it virtually escape-proof, and permits ready accessibility to the animals by technicians. Both liquids and solids are easily available to the animals through the grid.



High-Speed Induced Die Feeder

A new Model 215 induced die feeder that enables single rotary tablet presses to produce tablets at rates up to 1,800 per minute has been announced by Arthur Colton Company, 3400 E. Lafayette, Detroit 7, Michigan. The unit can be installed on any Model 216 or Model 220 Colton single rotary tablet press.

Cost savings result from the ability to run consistently many granulations at increased speed, as well as from the reduction or elimination of granulation operations. Positive die fill is achieved by an agitator and die feed rotors in a feed frame assembly. Tablet material flow is from the hopper into the agitator area in the feed frame. Speed is adjustable.

High-Speed, Metering Filling Machine

The Multi-Fill Machine Company, 340 North Westwood Avenue, Toledo 7, Ohio, has made available a new pharmaceutical filling machine that accurately meters and fills liquids and semiliquids into small containers of different sizes and shapes at a very high rate of speed. The unit was developed by the Donofrio Engineering Staff of Donofrio Brothers.

Rapid Industrial Counter

Reliable industrial counting at speeds over 1,500 a minute may now be accomplished with Robot-Eye RE-8 Photo-Electronic Counter. Manufactured by Standard Instrument Corporation, 657 Broadway, New York City 12, the Robot-Eye counts by interrupted or reflected light beam, with no physical contact with objects being counted. The instrument embodies a six-digit plug-in counter, which has a life of

more than 100,000,000 counts. The replacement element plugs in; counter resets to zero at the touch of a button. Photo cell and light source are swivel-mounted for easy installation, and amplifier-counter can be remotely mounted. Units are compact and can be had in waterproof housings, at extra cost. A brochure is available.

Dust-Tight Valve for Dry Solids

Patterson-Kelley Company, Inc., East Stroudsburg, Penna., is marketing a new dust-tight valve for use with general equipment processing or storing dry solids. The Solids Flow Valve is compact and stainless, and is designed for such operations as blending, milling and conveying, where discharge and flow of

dry powders and granulations must be controlled. Available accessories include special adapters for mounting the valve to existing equipment, a plastic bag adapter and a positive close-off cover for use on vacuum vessels. Parts can be easily replaced and positioning is precise. Available in 8, 10 and 12 inch sizes, with 8¼, 10¼ and 12¼ inch openings and 14¾ inch outside diameters. All vales are 1½ inches thick.

Hand-Operated Pipetting Device

A new device, the Pumpett Automatic Pipette Control, makes it unnecessary to fill a laboratory pipette by mouth suction, which can be dangerous as well as distasteful. Produced by Arthur S. LaPine and Company, 6001 South Knox Avenue, Chicago 29, Illinois, the Pumpett is designed for operation with one hand, can control micro quantities, and keeps liquid under constant observation at eye level. Especially recommended for safety where corrosive, toxic or infectious liquids and sterile or radio-active solutions are handled, the Pumpette can be completely dismantled for cleaning and sterilizing, and quickly reassembled.

Moisture Balance with Autotransformer

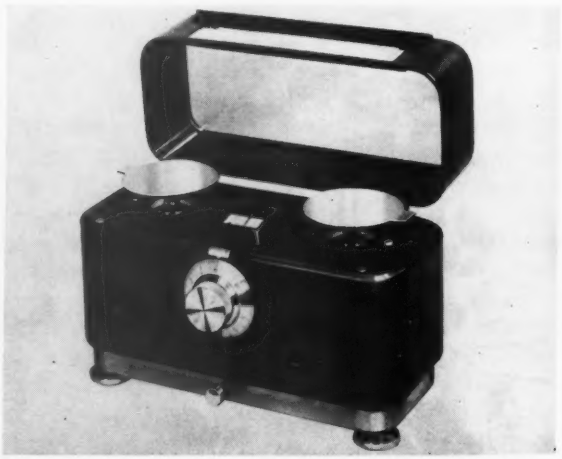
A new and improved moisture balance for fast and highly accurate determinations of moisture content in a wide variety of materials has been designed by Central Scientific Company, Chicago, Illinois. Its principle feature is a built-in autotransformer that regulates voltage automatically and provides more convenient temperature control. Simple to operate even for an inexperienced technician, the balance is capable of reducing, from one-half hour or more to only a few minutes, the time required for accurately testing a material's moisture content.

The balance both drys and weighs simultaneously, and the calibrated scale is easy to read. The unit comes with disposable weighing dishes made deeper than former models, and they are rigid, to keep liquid samples uniformly distributed and eliminate spilling. A built-in magnetic damper reduces pan vibrations, and an extra torsion wire for 25-gram samples is supplied. Housed in a solid cast aluminum case, the balance can be used wherever a 115-volt, 60-cycle outlet is available.

Dial Balance Saves Weighing Time

Weighings can be made in one-third of the usual time with the new Dial Balance manufactured by the Torsion Balance Company, Clifton, New Jersey. The balance, which has a capacity of 120 grams, features a simple graduated dial that can be turned without arresting the oil-damped balance, replacing the time-consuming "cut-and-dry" procedure. It retains its original accuracy after more than a million weighings and is unconditionally guaranteed by the firm.

The new Dial Balance is available in two models: DLT2, which has a 120-gram capacity and a 10-mil-



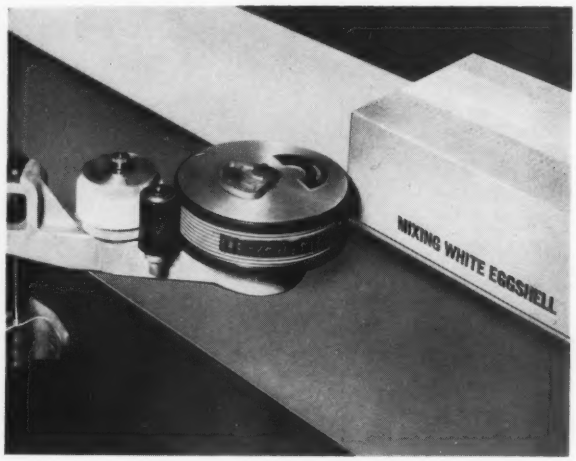
ligram sensibility, and DLT2-1, which has the same specifications but is equipped with a polished stainless steel scoop for seed or other bulky materials.

The metal case has a corrosion-resistant gray finish constructed to exclude dust and chemicals. The hinged lid is 2¾ inches high with a glass front and top, and the unit measures 11½ x 6 x 8¼ inches.

Package Marker Features Locking Cam

A new, improved model of its low-cost Whippet Marker has been introduced by Industrial Marking Equipment Company, 655 Berriman Street, Brooklyn 8, New York. A locking cam, which permits regulation of the printing drum for perfect registration throughout the full 360°, replaces the former broached shaft, thus permitting the Whippet to print messages on boxes or cartons without danger of smearing or of getting out of registration.

All moving parts are equipped with ball bearings



that will not "freeze up" even when loaded with ink, lubricant or other material, and precision castings are used throughout. The unit is easily mounted on the conveyor line and needs no operator; friction driven, it takes its speed from the speed of the line and is self-inking. The base-lock rubber type is easily interchanged. Precision-ground ink transfer rolls are used to insure uniform inking and longer lasting inking felts.

Unique Lift Truck Counterweight

The Big Joe Manufacturing Company, Wisconsin Dells, Wisconsin, has introduced a free and easy-to-maneuver lift truck, the Counterweighter, which is a 100-pound capacity, direct-approach materials handling tool that can handle double-faced pallets in addition to wire coils, tote pans, rolls, dies, jigs, carboys and the like.

It is a light unit and is adaptable to any specific weight-lifting problem from one to 1000 pounds. by virtue of its unique counterbalancing principle. Only 22 inches in over-all width, the drum tilter is ideal for solid-drum stacking and travel within 24-inch aisles. The Counterweighter works easily under low-ceiling limitations, yet lifts loads up to 90-inch heights. It solves many elevator and other light-load floor requirement problems.

Bulk Material Conveyor Elevator

A newly designed bulk material conveyor elevator designed specifically to solve problems of the chemical, pharmaceutical and food industries is now available from the Bucket Elevator Company, 360 Springfield Avenue, Summit, New Jersey. Called the V Series, it features removable covers held in place with quick-opening toggle clamps, so the elevator side can be stripped for cleaning in minutes. Seamless buckets, rounded corners and shrouded bolts also contribute to easy cleaning, and the unit conforms to the most rigid municipal health requirements.

Constructed from stainless steel, carbon steel or galvannealed steel, the elevator comes in sizes and types to fit most industry needs.

Transporter Fork-Over-Arm Stacker

The Automatic Transportation Company Division of the Yale & Towne Manufacturing Company, 149 W. 87th Street, Chicago, Illinois, has developed a new lightweight transporter, the Fork-Over-Arm Stacker, Model WOAT, which can handle either single or double deck block-type pallets or skids and is capable of performing at maximum efficiency in narrow-aisle operations and on floors unsafe for other types of trucks. Available in 2000, 4000, and 6000 pound capacities, the model is built in a wide variety of fork lengths and widths, and with lifting heights to fit all requirements. A brochure and a nomograph for determining aisle requirements are available upon request.

Lint-Free Paper Wipers

The Industrial Packaged Products Division of the Scott Paper Company, Front and Market Sts., Chester, Penna., offers lint-free paper wipers for cleaning lipstick molds, dispensing apparatus and assembly equipment. The wipers eliminate lint deposits and contaminated lipstick mold surfaces. Having hundreds of "perf-embossed" indentations in the paper, the wipers are also suited for entrapment of contaminating substances. The wipers are also efficient cleaners of liquid dispensing apparatus, pneumatic bottle lablers and stapling machines. Uniform properties, such as size, strength and absorbing capacity, help personnel develop consistent wiping skills for maintaining equipment. Economies on laundry expenses and associated handling costs are made possible.

A user report, Wiper User Report, Form No. 1834, giving details of wiping practices in an actual cosmetic plant, is available upon request.

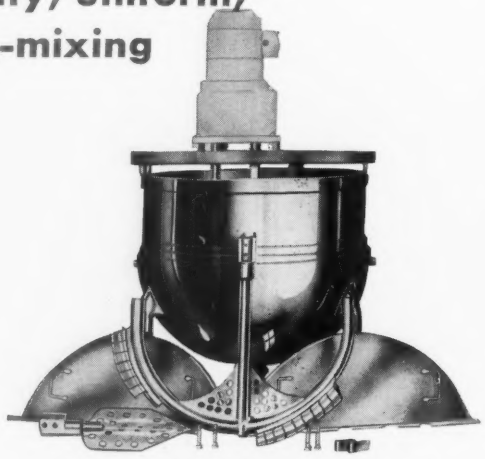
Nothing could be finer

GROEN stainless steel, steam-jacketed, COOKER-MIXERS for high purity, uniform, dependable blending-mixing

Whatever your cooking-mixing-cooling operation, look to GROEN for your stainless steel, steam-jacketed "cooker-mixer" kettles designed to process virtually any viscous product to exacting requirements. They're available in stationary and trunnion designs, for any capacity required.

Pictured here, the Model TA stationary kettle features twin-shaft agitator assuring thorough blending-mixing. Main agitator with finger-like scraper blades rotates slowly and swirls the material into the high-speed, secondary mixer. Design permits the use of various mixers—paddle, beater, bar or turbine types. All agitator parts can be easily removed for fast, effortless cleaning.

GROEN also builds a complete line of stainless steel Mixing, Cooking and Storage Tanks, Revolving/Coating Pans, and Vacuum/Pressure Vessels. For more technical information and engineering counsel, write to Dept. DCI- 359



GROEN MODEL TA stainless steel "cooker-mixer" kettles are ideal in processing creams, batters, adhesives, pigments and other viscous materials. Laboratory and pilot plant models are also available.

Extra heavy-duty, lifetime construction plus sanitary, modern design.

GROEN REVOLVING PANS

Dependable, silent-operating, stainless steel, Revolving/Coating Pans (with or without steam-jacket) are available in a wide range of bowl diameters—pitched for maximum capacity. Motor and drive are completely enclosed.

FREE LITERATURE

Bulletin TAK-2 gives complete description and specifications on GROEN line of stainless steel, stationary and trunnion "cooker-mixer" kettles. Revolving/Coating Pans described in Bulletin VP-1. Literature sent on request.

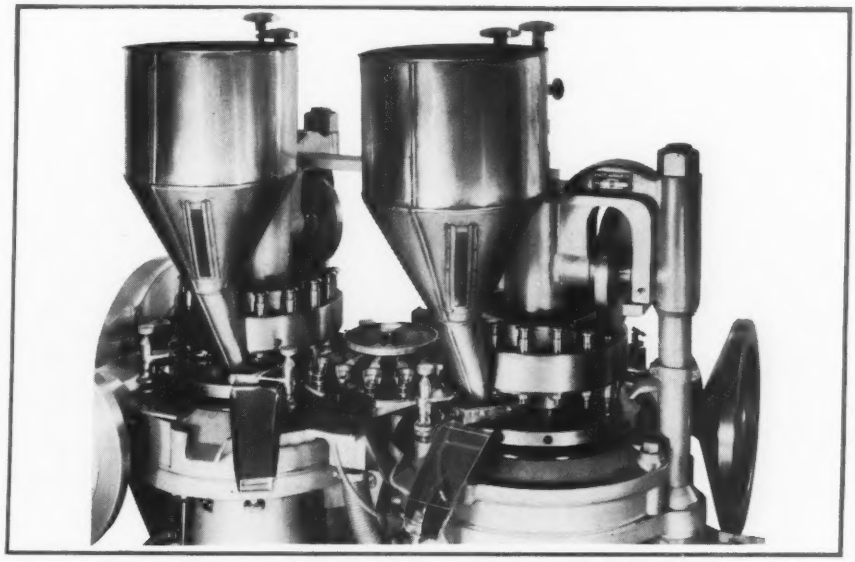
World's Largest Producers of Stainless Steel, Steam-Jacketed Kettles —Since 1907

GROEN GROEN MFG. CO.

4535 W. ARMITAGE, CHICAGO 39 • 30 CHURCH ST., NEW YORK 7

DRYCOTA

DRY COAT – TABLET – SLUG WITH ONE MACHINE



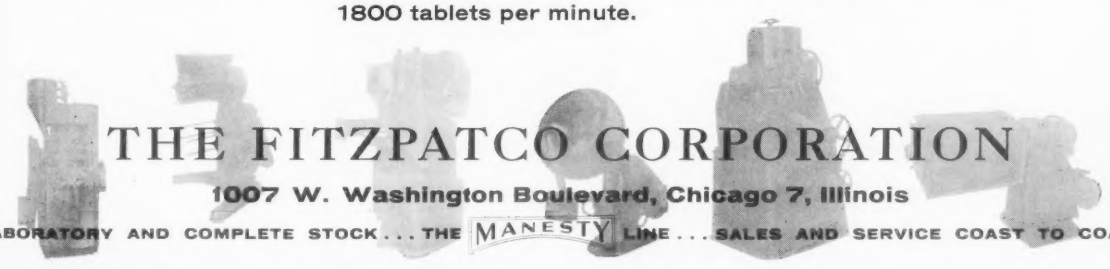
The DRYCOTA is virtually a COMPLETE TABLETTING DEPARTMENT consisting of two heavy duty D3 Presses. It requires less than *one-minute* to convert from Dry Coating to Tabletting or Slugging.

The flexibility of the DRYCOTA permits the retiring of antiquated, single-purpose equipment.

1. ***IT DRY COATS . . .*** Ovals, Capsules or Rounds—directly from granulations—no rehandling of cores.

2. ***IT TABLETS . . . . .*** Flexibility of two Rotary Presses—simultaneously produces tablets of two shapes or formulations.

3. ***IT SLUGS . . . . . .*** Diameters up to 1"—pressures to 22,400 lbs.—rates to 1800 tablets per minute.



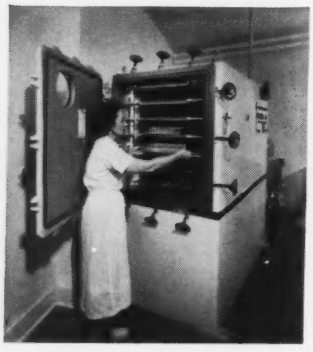
THE FITZPATCO CORPORATION

1007 W. Washington Boulevard, Chicago 7, Illinois

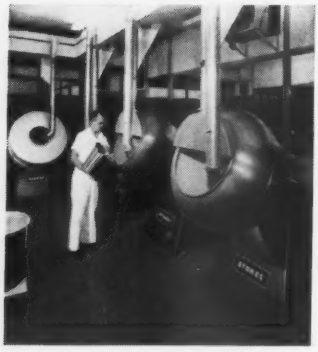
LABORATORY AND COMPLETE STOCK . . . THE MANESTY LINE . . . SALES AND SERVICE COAST TO COAST

IN CARRTONE'S DEPARTMENT, worker loads a Stokes stainless steel Mixer, in which 100 lb. of tablet ingredients are blended in 20 to 30 minutes. Carrtone's tabletting room is just beyond, and the coating and polishing room can be seen in background.

other Stokes equipment at work for Carrtone...



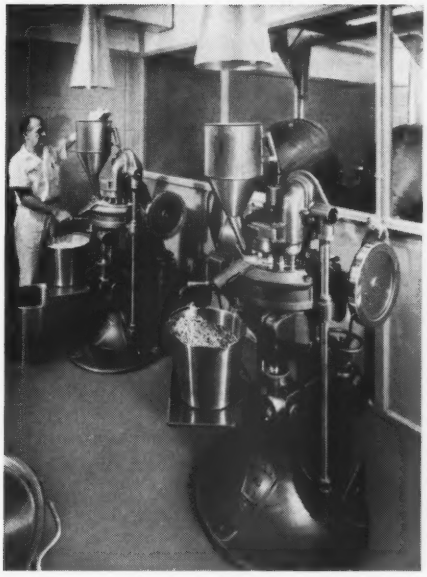
Freezing at minus 55°C, in this Stokes Vacuum Freeze Dryer, prolongs shelf life of non-stable drug combinations and hormones, assures product uniformity, saves up to 15% on raw materials.



One operator supervises a battery of Stokes Coating Pans and one Stokes Polishing Head in Carrtone's coating and polishing room. Each pan handles from 75,000 to 250,000 tablets per load, depending on tablet size.

The Stokes Drying Closet is designed for efficient drying of pharmaceutical granulations. At Carrtone, it is also used for fast, thorough drying of glassware and other equipment used for packaging parenteral medications.

Hundreds of thousands of tablets a day roll out of each Stokes Automatic Tabletting Machine at Carrtone. Operator needs only to fill hopper with ingredients . . . returns later to pick up finished tablets.



Carrtone's New Production Facilities

. . . profit from Stokes' single-source service

Increased production of a wider range of products . . . improved quality control . . . greater control over inventory and delivery were gained by Carrtone Laboratories, Inc., Metairie, La., by installing its own complete facilities for manufacturing its diversified line of ethical pharmaceuticals, including tablets, capsules, oral solutions and suspensions, and injectable vitamin, hormone and specialty formulas.

Carrtone called on Stokes for the single-source responsibility and complete equipment line needed to assure an economical, integrated operation. Now in operation, Carrtone's new plant meets every expectation. And Carrtone's staff has found that the design and operating features of the Stokes equipment make it easier to maintain continuous, high-volume production within strictest product specifications.

If you are now contracting for all or a large part of your production needs, Stokes invites you to find out how this complete service . . . based on Stokes' long experience in serving the pharmaceutical industry . . . helps make it more profitable to have your own facilities. Stokes engineers can help you select equipment for economical production . . . aid in plant layout to make most efficient use of space . . . supervise installation, operator training and start-up. For full information on Stokes equipment and services, write to us, or contact your nearest Stokes office.

Pharmaceutical Equipment Division
F. J. STOKES CORPORATION
5500 Tabor Road, Philadelphia 20, Pa.

STOKES

(*Continued from page 593*)

the latter to develop respiratory-tract ailments incidental to the chilling effects of the spraying procedure. An exposure box with inside measurements of 20″ x 22″ x 48″ equipped with sliding glass doors in front permitted the necessary manipulations of an operator and observation of the subject's behavior during exposure. Five animals partially immobilized were exposed during each operation. The exposure chamber was installed in a large ventilating laboratory hood to permit the rapid clearing of the atmosphere in the chamber between exposures. There were no special preparations of the animals prior to exposure. During exposure the animals' eyes were protected with close-fitting, and easily removed goggles. The frequent, repeated exposures necessitated protection of the eyes to avoid injury.

The operator directed the released spray to the back and sides of the subject's head; however, it was impossible to avoid a small amount of spray from reaching a limited portion of the upper body. The spray was released at distances varying from six to 12 inches from the subjects' heads. Upon removal from the exposure chamber, the head and that portion of the upper body exhibiting contamination with spray material were sponged with damp towels using water or dilute alcohol for the spray materials insoluble in water. This precaution was taken to avoid the oral ingestion of materials which may have settled on the fur of the animals.

Acute Inhalation Exposures

In the acute inhalation experiments the animals were subjected to 30-second spray releases every half hour until the contents of the given container (275-400 gms.) were exhausted. With the exception of one hour at noon, the animals remained (partially immobilized) in the exposure chamber. The glass sliding doors were held slightly ajar to permit some ventilation. The total weight of spray released during 30 seconds varied with various samples from 20 to 35 gms. of material, the mean being approximately 30 gms. per 30 seconds of release.

The subjects exhibited no adverse effects during the intensive acute exposures with any of the sample types used, nor were any untoward effects noted in the succeeding four days following exposure. At this point the subjects were sacrificed for gross and histopathological examination of their tissues. The latter was limited essentially to respiratory tract and lymphoid structures, and was negative, as was the gross examination.

Ninety-Day Inhalation Studies

Each group of five subjects assigned to each of six spray types were carefully screened before assignment to the experiment. A radiograph of the chest and upper body was taken. Hematology included the determination of percentage of hemoglobin, the hematocrit and differential count of white cells. Hematological examinations were also made at 30-day intervals during the experiment.

In these 90-day studies, exposures were made twice daily (A.M. and P.M.). Following the 30-second spray release, animals remained in the sprayed atmosphere of the chamber for an additional 15 minutes. Upon release from the chamber, the animals were cleaned as indicated above and returned to their housing cages.

At the termination of the 90-day exposures, radiographs of chest and upper body were repeated, hematological examinations made and the animals sacrificed for the gross and histological examination of their tissues.

The animals exhibited no adverse effects during or at completion of the 90-day exposures. Radiographs revealed no alterations in the lungs and no retention of radiopaque material in this organ. Hematological examinations during and following the 90-day exposures revealed no blood abnormalities.

Pathology

At autopsy, gross examination of the rabbits in the 90-day inhalation experiment was entirely negative except that two had slightly pitted kidneys, a lower than usual incidence. Six untreated rabbits of the same size, concurrently taken from stock to serve as controls additional to the general run of our rabbits, were also negative. For each of the test animals, with a few partial exceptions, hematoxylin-eosin-stained paraffin sections were made of formalin-fixed liver, kidney, spleen, bone marrow (Wright-Giemsa stained smear also), mesenteric lymph node(s), deep cervical lymph node, and the fatty mass in the upper mediastinumn containing the relatively small thoracic lymph nodes and the more or less involuted thymes; also, of lung fixed in both 10 per cent formalin and in Bouin's fluid and trachea fixed in Bouin. For each control rabbit, sections were made of lung, trachea and the various lymphoid structures mentioned above, and bone marrow smears.

Special stains were limited to periodic acid-Schiff and Congo Red. The former was used because it is a good survey stain for complex carbohydrates, and the latter because it is used for detecting polyvinylpyrrolidone. It should be noted here that the complete composition of some of the test sprays in the present study was not known to us, that probably special stains do not exist for the majority of the total complex of ingredients of the sprays and that, as a generality in thesauroses, there are changes visible in the routine stains. Fourteen test (two or three animals per group) and all six control rabbits had tissue slides stained by the PAS method—with or without enzymatic digestion to remove glycogen—which included from one to all of the following: lung, spleen.

(*Continued on page 652*)

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CYANAMID CUTS YOUR NEOMYCIN PRODUCTION COSTS

Bulk neomycin sulfate delivered at advanced production points . . . reducing your processing costs.

SUPER WHITE	the newest, whitest, finest grade neomycin sulfate available. Designed for maximum elegance—particularly for use in injectables and ophthalmic solutions.
GRANULAR	specific for tablet manufacture. Free-flowing and easily compressed without adding lubricants or diluents.
TECHNICAL GRADE	especially prepared for use in creams, ointments, lotions and other products of the cosmetics industry.
VETERINARY GRADE	a neomycin sulfate of uniformly superior quality, ideally suited to veterinary use, free from udder irritation.
U. S. P. STANDARD	traditionally fine Cyanamid quality, for oral and topical medications not requiring special characteristics.

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COMING EVENTS . . . . .

MAY

14-18 **Toilet Goods Manufacturers' Assn. of Canada,** annual general meeting and convention, Whiteface Inn, Whiteface, New York (Mrs. Agnes Howard, T.G.M.A., 252 Eglinton Ave. East, Toronto 12 Ontario)

17-19 **American College of Apothecaries,** annual convention, Hotel Roosevelt, New Orleans (A.C.P., Hamilton Court Hotel, 39th & Chestnut Streets, Philadelphia 4)

17-20 **Flavoring Extract Manufacturers Assn.,** annual convention, Traymore Hotel, Atlantic City, N. J.

18-20 **Chemical Specialties Manufacturers Assn.,** midyear meeting, Drake Hotel, Chicago (Herbert W. Hamilton, 50 E. 41st St., N. Y. C. 17)

19-22 **Glass Container Manufacturers Institute,** spring meeting, Greenbrier Hotel, White Sulphur Springs, West Virginia (H. W. Kuni, 99 Park Ave., N. Y. C. 16)

20-24 **National Paper Box Manufacturers Assn.,** annual convention, Hotel Sheraton, Philadelphia (Norman T. Baldwin, N.P.B.M.A., Liberty Trust Bldg. Philadelphia 7)

21-24 **National Beauty and Barber Manufacturers' Assn.,** annual convention, Concord Hotel, Kiamesha Lake, N. Y. (Warren Freedman, Clairol, Inc., 510 Sixth Ave., N. Y. C.)

25-27 **Pharmaceutical Manufacturers Assn.,** Production and Engineering Section, The Cloister, Sea Island, Ga.

25-28 **American Society of Mechanical Engineers,** design engineering show and design engineering conference, Convention Hall, Philadelphia (Clapp & Poliak, Inc., 341 Madison Ave., N. Y. C. 17)

JUNE

1-4 **American Dermatological Assn.,** Claridge Hotel, Atlantic City (Dr. Wiley M. Sams, 25 Southeast Second Ave., Miami, Fla.)

5 **Parenteral Drug Assn.,** dinner meeting, Sheraton Hotel, Philadelphia, Penna.

8-12 **American Medical Assn.,** annual meeting, Atlantic City (Dr. George F. Lull, 535 N. Dearborn St., Chicago 10)

9-12 **Material Handling Institute,** exposition, Cleveland Auditorium, Cleveland, Ohio; Concurrently, **American Material Handling Society,** technical sessions (M.H.I., One Gateway Center, Pittsburgh 22, Pa.

11-13 **Manufacturing Chemists' Assn.,** annual meeting, Greenbrier Hotel, White Sulphur Springs, W. Va. (M. F. Crass, Jr., M.C.A. 1825 Connecticut Ave., N.W., Washington 9, D. C.)

15-17 **American Chemical Society,** Division of Organic Chemistry, National Organic Symposium, U. of Washington, Seattle (Organic Symposium, Bagley Hall, U. of Washington, Seattle 5, Wash.)

15-19 **Gordon Research Conference** (Lipid Metabolism), Kimball Union Academy, Meriden, N H. (W. G. Parks, Dept. of Chemistry, Univ. of Rhode Island, Kingston, R. I.)

22-23 **American Animal Health Pharmaceutical Assn.,** annual convention, Hotel President, Kansas City, Mo. (N. M. Ferguson, A.A.H.P.A., 3801 Cullen Blvd., Houston 4, Texas)

JULY

13-17 **Gordon Research Conference** (Chemistry, Physiology and Structure of Bones and Teeth), Kimball Union Academy, Meriden, N. H. (See above.)

20-24 **Gordon Research Conference** (Cell Structure and Metabolism), Kimball Union Academy, Meriden, N. H. (See above.)

20-24 **Gordon Research Conference** (Microbiological Deterioration), New Hampton School, New Hampton, N. H. (See above.)

AUGUST

3-7 **Gordon Research Conference** (Medicinal Chemistry), Colby Junior College, New London, N. H. (See above.)

3-7 **Gordon Research Conference** (Steroids and Related Natural Products), New Hampton, N. H. (See above.)

10-14 **Gordon Research Conference** (Toxicology and Safety Evaluation), Kimball Union Academy, Meriden, N. H. (See above.)

11-13 **Western Packaging & Materials Handling Exposition,** Civic Auditorium, San Francisco

16-23 **American Pharmaceutical Assn.,** annual meeting, Netherlands-Hilton Hotel, Cincinnati, Ohio (Dr. Robert P. Fischelis, 2215 Constitution Ave., N.W., Washington 7, D.C.)

17-21 **Gordon Research Conference** (Food and Nutrition), Colby Junior College, New London, N. H. (See above.)

23-26 **National Pharmaceutical Council,** pharmacy education-industry forum, Princeton Inn, Princeton, N. J.

30 **Federal Wholesale Druggists' Assn.,** annual convention (through Sept. 2), Greenbrier Hotel, White Sulphur Springs, West Virginia (R. C. Schlotterer, F.W.D.A., 2 Lexington Ave., N. Y. C. 10)

SEPTEMBER

9-11 **Pharmaceutical Manufacturers Assn.,** International Section, Greenbrier Hotel, White Sulphur Springs, W. Va.

13-18 **American Chemical Society,** national meeting, Atlantic City, N. J. (Alden H. Emery, Executive Secretary, 115 Sixteenth St., N.W., Washington 6, D.C.)

17-20 **Drug, Chemical & Allied Trades Section, New York Board of Trade,** annual meeting, Sagamore Hotel, Bolton Landing, Lake George, N. Y. (Helen I. Booth, D.C.A.T., 291 Broadway, N. Y. C 7)

20-23 **The Proprietary Assn. of Canada,** annual general meeting and convention, The Chantecler, Ste. Adele-en-haut, P.Q. (Mrs. Agnes Howard, P.A.C., 252 Eglinton Ave. East, Toronto 12, Ontario)

28-30 **American Oil Chemists' Society,** Hotel Statler, Los Angeles, Calif

OCTOBER

14-16 **Parenteral Drug Assn.,** annual convention, Statler Hotel, N. Y. C.

25-28 **Pharmaceutical Manufacturers Assn.,** Financial Section, Greenbrier Hotel, White Sulphur Springs, W. Va.

NOVEMBER

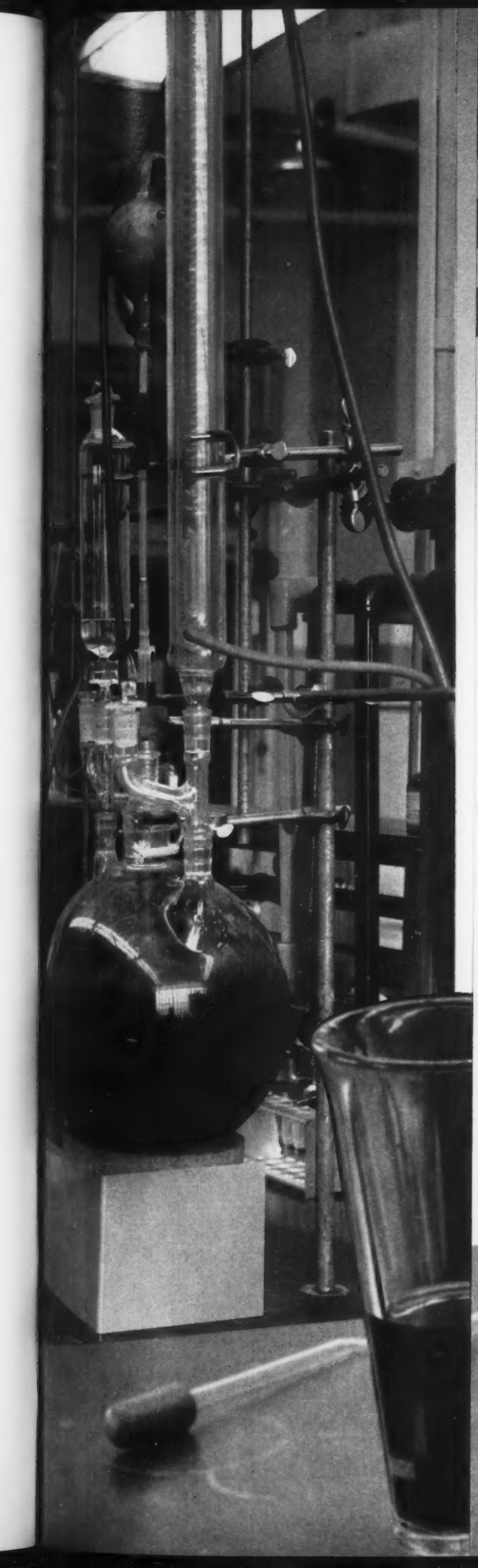
2-4 **Pharmaceutical Manufacturers Assn.,** Research and Development Section, Greenbrier Hotel, White Sulphur Springs, W. Va.

3 **1959 Exposition of Chemical Industry,** Coliseum, N. Y. C. (through December 4)

4-6 **Symposium on Antibiotics,** Mayflower Hotel, Washington, D. C. (Dr. Henry Welch, Director, Div. of Antibiotics, F. D. A., U. S. Dept. Health, Education, and Welfare, Washington 25, D. C.)

7-12 **National Wholesale Druggists' Assn.,** annual convention, Americana Hotel, Bal Harbour, Fla. (Harry A. Kimbriel, N.W.D.A., 60 East 42nd St., N. Y. C. 17)

9-12 **Glass Container Manufacturers Institute,** fall meeting, Arizona-Biltmore Hotel, Phoenix, Arizona (H. W. Kuni, 99 Park Ave., N. Y. C. 6)



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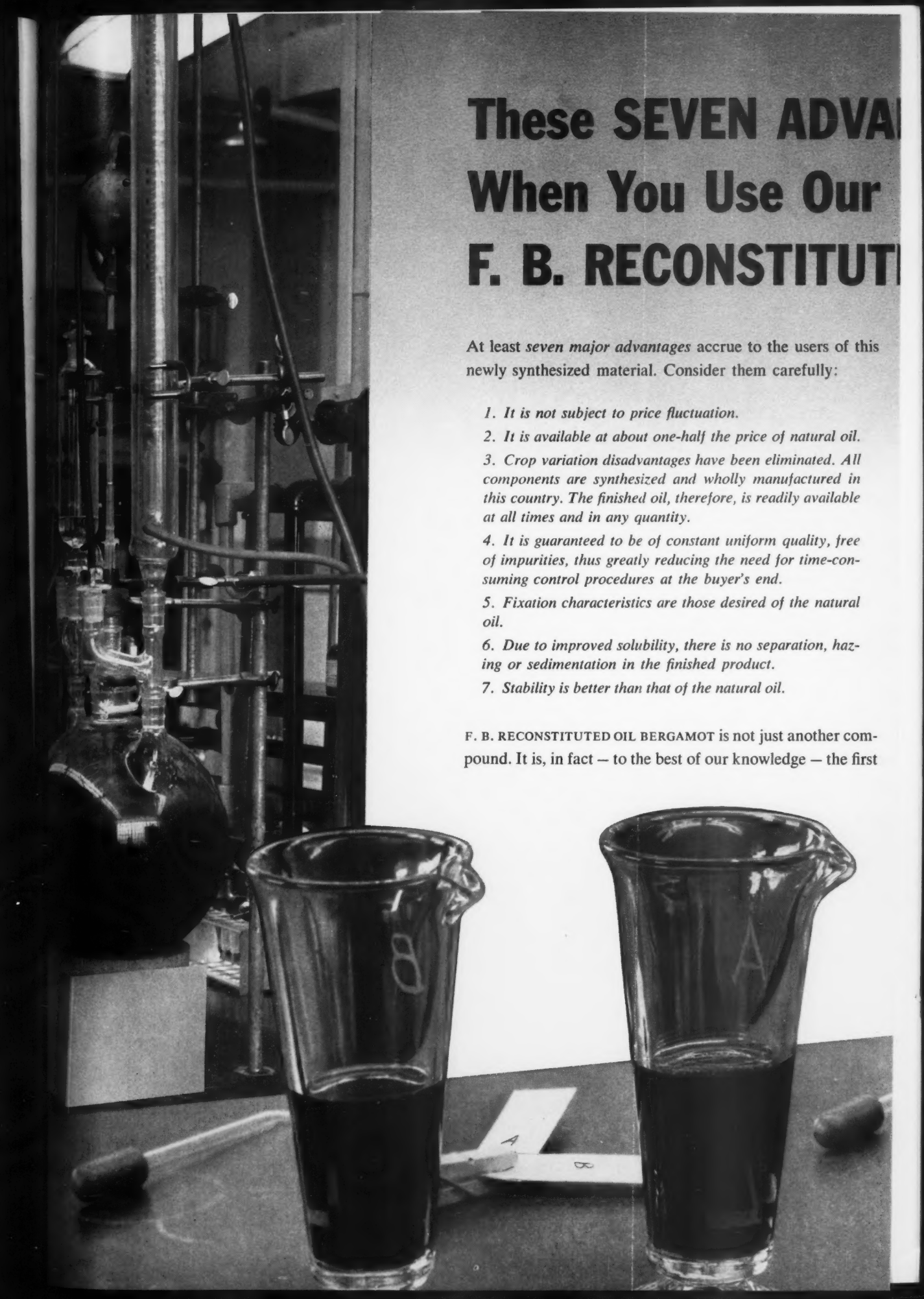
New
ED OIL* BERGAMOT

essential oil ever to be successfully produced entirely by chemical synthesis in unlimited commercial quantities. With the classical methods of analysis for background, our Fundamental Research Laboratories have used the newest instrumental and most advanced scientific techniques to achieve a complete chemical breakdown of the oil's complex structure. Part by part – and in correct proportions – they have reconstructed a finished product that not only matches the genuine oil but in certain important respects provides improvement as noted in the advantages already cited. Of particular interest is the fact that *it does not contain any natural oil bergamot nor any derivative thereof.*

You owe it to yourself to examine and thoroughly test this remarkable new oil. If you'll address us on your letterhead, we'll gladly supply you a FREE sample for that purpose.

*Trade Mark

See back page for further details.



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When You Use Our
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At least *seven major advantages* accrue to the users of this newly synthesized material. Consider them carefully:

1. *It is not subject to price fluctuation.*
2. *It is available at about one-half the price of natural oil.*
3. *Crop variation disadvantages have been eliminated. All components are synthesized and wholly manufactured in this country. The finished oil, therefore, is readily available at all times and in any quantity.*
4. *It is guaranteed to be of constant uniform quality, free of impurities, thus greatly reducing the need for time-consuming control procedures at the buyer's end.*
5. *Fixation characteristics are those desired of the natural oil.*
6. *Due to improved solubility, there is no separation, hazing or sedimentation in the finished product.*
7. *Stability is better than that of the natural oil.*

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essential oil ever to be successfully produced entirely by chemical synthesis in unlimited commercial quantities. With the classical methods of analysis for background, our Fundamental Research Laboratories have used the newest instrumental and most advanced scientific techniques to achieve a complete chemical breakdown of the oil's complex structure. Part by part – and in correct proportions – they have reconstructed a finished product that not only matches the genuine oil but in certain important respects provides improvement as noted in the advantages already cited. Of particular interest is the fact that *it does not contain any natural oil bergamot nor any derivative thereof.*

You owe it to yourself to examine and thoroughly test this remarkable new oil. If you'll address us on your letterhead, we'll gladly supply you a FREE sample for that purpose.

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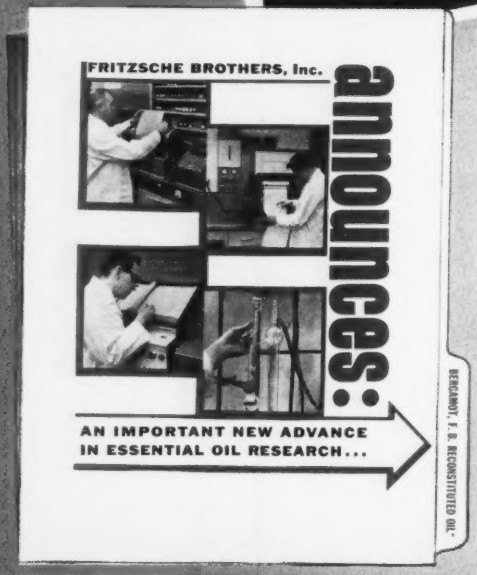
Concise, convenient file-folder with description and recommendations for using F. B. RECONSTITUTED OIL BERGAMOT.

This new label identifies the genuine F. B. RECONSTITUTED OIL BERGAMOT.



MANUFACTURERS of toiletries—perfumes, colognes, cosmetics, soaps, creams, lotions, etc., interested in the use of this product or in its physical and chemical characteristics, will want a copy of our announcement file-folder entitled: AN IMPORTANT NEW ADVANCE IN ESSENTIAL OIL RESEARCH. It gives pertinent and detailed information regarding this extraordinary new product. A copy will be sent promptly upon request.

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Perfumer's Shelf

Tonalid

Polak's Frutal Works of Middletown, N. Y., has announced a musk odorant under the Trade mark of Tonalid. This new chemical is said to possess special advantages in diffusive power, blending qualities, total compatibility with all odor types and great strength. Chemically, it is 1,1,2,2,3,3,5-heptamethylindan - 6 - methyl ketone.

The odor can best be described as characteristic of expensive musk: radiating yet tenacious, without sharp or chemical bynotes. The diffusive quality shows up readily in a perfume as a vibrant top-note. Thus its performance is comparable to that of natural musk tincture, enhancing floral and spicy-woody notes, blending aldehyde notes, and toning down their sharpness.

Folrosia

Folrosia (Givaudan) is a new synthetic aromatic with a deep red rose character and nuances which are reminiscent of the green rose foliage and having a high degree of naturalness and floralcy. Rose blends with fresh leafy notes can be made which combine interestingly with formates, citral, isocyclocitral, methyl heptine carbonate and phenylacetaldeyhde dimethyl acetal.

Increased floralcy, intensity, realism and naturalness can be imparted to other floral compositions such as lilac, muguet, geranium and neroli. In lilac blends, Folrosia has an excellent blending effect on such ingredients as terpineol, aubepine, hydroxycitronellal and heliotropin, giving the composition a desirable roundness. Amounts up to 20 per cent have proven to be valuable for bringing out a natural fresh-green note in the lilac compositions while interesting modifications of lilac can be obtained with larger amounts.

Soap cakes containing 1 per cent of Folrosia were exposed to daylight and air for a twelve month period. The odor of the cakes, which was strong, fresh and rose-like, remained stable and maintained its strength throughout the test period.

Compositions containing varied percentages of Folrosia were incorporated into heavy duty liquid detergents, powdered detergents and detergent toilet bars and were evaluated for a period of over one year. The perfume blends showed excellent performance both as to stability and odor effectiveness.

Folrosia was incorporated into various cosmetic creams at a concentration of 1 per cent. It produced a strong, fresh, rose-like note in the creams which remained stable for more than twelve months. There was no evidence of discoloration in the creams nor any effect on the physical characteristics of the cosmetic preparations used.

Roche Aromatics

Hoffmann-La Roche offers commercial quantities of the following synthetics: linalyl formate, propionate, butyrate and isobutyrate; nerolidyl formate, acetate, propionate and isobutyrate; ethyl linalool and ethyl linalyl acetate. The linalyl esters posesess finer and cleaner odors than the corresponding materials made from natural oils because of their higher purity and freedom from other esters and terpenes. The synthetic process is said to yield products of greater stability.

While nerolidol has been known and used for a number of years as a valuable perfumers' raw material, its esters have not previously been commercially available. Like the parent alcohol nerolidol, these esters help to smooth and round out perfume compositions and confer a cohesive effect. The formate possesses a light, fresh, lily type of odor with a tenacious, woody character. The acetate resembles linalyl acetate but is more woody and balsamic, with a slight fruity nuance. The propionate has the ability to smooth and round out most perfume compositions. It has a light woody tonality with a dry leafy character. The isobutyrate has the fruitiest character of the nerolidyl esters.

Ethyl linalool has never been offered commercially before. It possesses a fine floral and slightly fruity odor of the linalool type with a waxy nuance suggestive of blossoms. It is softer and has a more floral character than linalool. Ethyl linalyl acetate is an entirely new product with a very agreeable odor, sweeter than that of linalyl acetate, less woody but more lasting.

Reconstituted Oil Bergamot

Fritzsche Brothers, Inc., is offering a reconstituted oil of bergamot with infrared and ultraviolet spectra that are almost identical with those produced by the natural oil. The oil, produced entirely by chemical synthesis, is an achievement based upon the use of infrared spectrophotometry, vapor-phase chromatography and liquid-solid chromatography with high plate efficiency fractionation. Advantages claimed for the material are freedom from price fluctuations; about half the price of the natural oil; elimination of crop variation; constantly uniform quality, free from impurities; fixation characteristics those of the natural oil; improved solubility; better stability.

Complete or partial replacement of natural oil by the reconstituted product in perfumes is said to assure excellent results. The new oil is more soluble in aerosol propellants; no initial darkening at the one per cent level takes place in white soaps, while the natural oil produces a slightly brown color; a better top note and less discoloration is claimed for use in hand lotions.

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Compounder's Corner

Cocoa Butter Substitute

Pharma-Palkena, offered by Dura Commodities Corp., New York, is a processed fraction of palm kernel stearin, suggested as a replacement for cocoa butter. Its physical properties are similar to those of cocoa butter but its cost is about half. It is a colorless, tasteless and odorless vegetable fat prepared by the fractional distillation of palm kernel oil. It has a sharper melting range than cocoa butter.

Overheating does not affect the solidifying of Pharma-Palkena as it does that of cocoa butter. This permits greater latitude in temperature control in the molding of suppositories.

The suppositories themselves seem to melt more uniformly, suggesting that the rate of release of medication may be more uniform. Lubrication of the mold is not required. A larger proportion of insoluble solids may be incorporated in Pharma-Palkena suppositories; they are less brittle than those prepared with cocoa butter. Suppositories stored at room temperature and at 5°C. for at least 10 months did not show rancidity or signs of physical change.

Antibiotics in Cosmetics

According to Dr. Veronica Lucey Conley, secretary of the A.M.A. Committee on Cosmetics, "The persistent trend toward the incorporation of pharmacologically active ingredients into cosmetics has caused growing concern among the medical profession. One example of this tendency is evident in the increasing interest among cosmetic manufacturers in the possible application and sales potential of the incorporation of antibiotics into cosmetics. Medical experience provides considerable evidence of the health implications in the widespread, prolonged, or indiscriminate use of antibiotics. Therefore, the Committee has authorized the publication of the following report on the inclusion of antibiotics in products intended for nontherapeutic purposes."

According to the report by C. T. Nelson and M. B. Sulzberger, *J.A.M.A.* 169: 1626, 1959, ". . . It has been proposed that agents such as bacitracin, neomycin, polymyxin, and tyrothricin be permitted in cosmetic preparations. Through their use, antimicrobial action would be secured against a wide spectrum of micro-organisms, and the antibiotics used would rarely be required later on for the treatment of systemic infections.

"At the present time, the foregoing antibiotics seem to have a relatively low potential for sensitization when applied to the skin. By and large, they are believed not to be potent sensitizers or irritants. Nevertheless, it is not unreasonable to assume that the frequency of sensitization and/or irritation might increase if these agents were applied indiscriminately over a prolonged period of time in an ever-mounting number of individuals. Their use in cosmetics would certainly augment the number of people at risk. By the same token, the time and duration of exposure would inevitably be increased because cosmetics may be applied one or more times each day. We do not have sufficient evidence at this point to state categorically that these compounds cause very little irritation or sensitization of the skin. As time goes on and as the use of these antibiotics becomes more widespread, we may expect that more instances of allergic contact dermatitis, as well as other forms of sensitization and irritation due to these agents, will be reported. Evidence that this may be so is already contained in publications by Baer and Ludwig, Epstein, Sidi, Hincky, and Longueville, and others, including our own observations of isolated cases of allergic contact dermatitis due to neomycin and streptomycin.

"In addition, few data are available on the possible toxic effects of bacitracin, polymyxin B, neomycin, and tyrothricin after absorption through the skin. All of these antibiotics are known nephrotoxins. Before they can be legitimately used in cosmetics, evidence should be accumulated to indicate that their prolonged and widespread use on the skin will, in fact, not produce toxic effects of any sort. The burden of proof that such toxicity does not exist rests with those who would include these agents in cosmetics.

"A third point at issue in this matter is the possibility that the indiscriminate use of these antibiotics may induce the development of microbial resistance to these agents. Although in vitro studies have indicated that the development of bacterial resistance to these antibiotics is not common, this fact should not produce a false sense of security regarding their indiscriminate use. . . .

"Insofar as we know, there is also no evidence that constant degerming of the skin (except to reduce axillary odors), such as would presumably occur with the widespread use of antibiotics in cosmetics, is necessarily always or even frequently desirable. Evidence has already been presented to show that the widespread topical use of neomycin may increase the number of patients who develop moniliasis as a complication of their therapy. Those who would include such antibiotics as bacitracin, tyrothricin, neomycin, and polymyxin in cosmetics should be prepared to show that their widespread use would not result in an increased incidence of infections due to micro-organisms that are resistant to these agents. Except for the

deodorant action of such agents in reducing axillary odors, their incorporation in cosmetics has not been proved to be of specific value, and their widespread use in cosmetics could well represent an increased risk to general public health as well as to certain hypersensitive individuals."

Comment: The full statement of Drs. Nelson and Sulzberger includes many statements of assumption such as "it is not unreasonable to assume," "might increase," "we do not have sufficient evidence at this point to state categorically that these compounds cause very little irritation or sensitization of the skin," "we may expect," "possibility," "may be expected," "presumption," "do not conclusively prove." Primarily on this basis, the authors and the A.M.A. assume that the incorporation of antibiotics in cosmetics might represent increased risk to general public health and assert that their use has not been proved to be of specific value. Since cosmetics containing antibiotics are classified as drugs, they must conform to FDA safety requirements, which should be ample protection for general public health. The current problem of sensitization and resistant bacterial strains arose not from uncontrolled public use of antibiotics, but from ill-advised use of these agents by members of the medical profession. The introductory statement by Dr. Conley that the trend toward the incorporation of pharmacologically active ingredients into cosmetics is a cause of concern to the medical profession implicitly contains the thought that the cosmetic industry can't possibly do right: treatment products arouse medical sneers because of their inability to perform, yet attempts to make them effective arouse concern. Products based upon experimental evidence showing safety and efficacy should be afforded an opportunity to prove themselves commercially, whether or not they are over-the counter ethicals, proprietaries or cosmetics. J.K.

Emulsion Dosage Form

U. S. Patent 2,867,565 was issued January 6, 1959 to W. H. Feinstone for a "Sulfonamide Composition Comprising a Lipid-Aqueous Emulsion Carrier" and is based on the discovery that when absorbable sulfonamides are administered in an emulsion of edible fat and water, as distinguished from unemulsified fat, in which the oil to drug ratio is less than twenty to one and preferably in the range between twelve to one and one to one, not only is the therapeutic activity of the drug enhanced as compared with its activity in aqueous suspension or in unemulsified oil, but the absorption of the drug is markedly facilitated, the blood concentration for the same amount of the drug is almost doubled in human subjects, and an effective blood concentration of the drug is maintained for up to six times as long, as when equal amounts of the drug are administered in aqueous suspension.

The three claims in the patent are:

1. A therapeutic composition for oral administration comprising an absorbable sulfonamide and a lipid-aqueous emulsion containing 20 per cent to 60 per cent by weight of an edible fat, the concentration of the sulfonamide being 0.5 gram per 5 cc. of said composition.

2. A therapeutic composition for oral administration comprising sulfadiazine and a lipid-aqueous emulsion containing 20 per cent to 60 per cent by weight of an edible fat, the concentration of the sulfadiazine being 0.5 gram per 5 cc. of said composition.

3. A therapeutic composition for oral administration comprising absorbable sulfonamide and a lipid-aqueous emulsion containing 20 per cent to 60 per cent by weight of an edible fat, the oil to drug ratio of the composition being between about one to one and about twelve to one.

Lanolin Fractionation

U.S.P. lanolin was treated with urea in the presence of methanol by A. Eisner, W. R. Noble and J. T. Scanlan of the U.S.D.A. Eastern Regional Research Laboratory (*J. Amer. Oil Chem. Soc.* 36:168, 1959) Three fractions obtained were a fluid fraction, 6.2 per cent of a hard wax and 19 per cent of a sticky semi-solid.

The fluid fraction, a viscous liquid at room temperature, amounts to about 71 per cent of the original lanolin. The properties of this fraction indicate that it may have considerable practical utility. Its analysis shows it to be practically of the same composition as lanolin. This and the ease with which it can be handled make it potentially valuable for use in formulations in place of ordinary lanolin. Furthermore it has better solubility than unmodified lanolin. At 25°C. a 10 per cent solution of the fluid fraction in mineral oil remains clear while a similar solution made from ordinary lanolin is cloudy. As in the case of lanolin, a further improvement in the fluid properties of the fraction can be obtained by acetylation.

Zinc Oxide-Salicylic Acid Ointments

E. Young and N. Weiffenbach (*Dermatologica* 118: 74, 1959) investigated ointments and pastes containing both zinc oxide and salicylic acid. By patch tests, determination of excretion of salicylic acid in the urine and by chemical analysis of the ointments, they concluded that zinc salicylate is formed. The substance has the same properties as zinc oxide, and the combination is useless for keratolytic or keratoplastic applications. The speed of reaction is such that even freshly prepared Lassar paste shows no free salicylic acid.

Iso-Jasmones

The iso-jasmones, according to M. Bornand (*France et Parf.* 2: 31, 1958), are not usually isomers of jasmone, but merely products with a similar chemical structure, such as cyclic ketones and lactones with a four to eight carbon side chain, preferably unbranched. It is difficult to describe the odors of these compounds: we know the characteristic notes of several commercial iso-jasmones, but not their constitution, while we know the structures of a number of patented compounds, but not their odors. According to the authors of these patents, the proposed substance is always a very valuable substitute for jasmone. It is one thing, however, to have an odor of the same family, and something else again to have the same finesse, the same quality.

Only one general statement seems possible. According to Werner, the cyclanones or cyclenones useful in perfumery have between 9 and 15 carbon atoms and the odor is strongest and most characteristic when C is eleven, as in jasmone. With fewer carbon atoms, the odor is more ethereal and fruity; with more carbon atoms, the odor is more flowery but less characteristic.

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(*Continued from page 644*)

thymus, thoracic lymph nodes, deep cervical lymph node, and mesenteric lymph node(s). Fifteen test and all six control rabbits had slides covering the same range of tissues stained with Congo Red.

The results of the pathological study were so negative that they can best be given in summary form.

(1) None of the organs examined showed any suggestion of an epithelioid cell or foam cell or other macrophage storage phenomenon induced by the hair sprays. No epithelioid cell proliferation was seen anywhere. The only accumulation of foam cell macrophages anywhere was in a mesenteric lymph node (but not in the other lymphoid structures, lung, etc.) of one rabbit receiving the lanolin type spray; this unique accumulation was not attributed to the treatment.

(2) The lymph nodes, particularly the mesenteric, but also the others studied, and the thymus, contained varying but quite small numbers of macrophages with dense granular nonpigmented or light-brown pigmented cytoplasm, and occasionally a few giant cells. These were present to the same degree in control and treated rabbits. This was also the case for the macrophages, less outstanding but somewhat greater in number, containing cellular debris in the spleen. No macrophages anywhere had in their cytoplasm the foamy, lightly basophilic material that is characteristic, in hematoxylin-eosin stains, of retained polyvinylpyrrolidone or perhaps some reaction product.

(3) With respect to histological lesions of other than a thesaurosis type, all structures examined were either negative or showed only minor incidental changes, and none of the latter had any correlation with treatment.

(4) The two special stains showed, as did the hematoxylin-eosin stain, no difference between treated and control animals in degree or quantity of stainable material in the various structures. The granular material in macrophages in lymphoid structures mentioned above under point (2) was strongly PAS-positive, with or without enzymatic digestion. Its total quantity, as previously mentioned, was relatively small. Congo Red stained less material within macrophages than did PAS, and on the whole was nearly negative, except for staining of cellular debris in the splenic macrophages, and for staining elastic tissue. In the various lymph nodes the Congo Red staining was either negative or of trace degree.

Discussion

The physical characteristics—particle size and distribution—of an aerosol hair spray extruded from a pressurized container depend on: (1) the formulation of the product, that is, the characteristics of the propellent gases, the solvent, and the nonvolatile hair fixative; (2) the mechanical details of the release mechanism in the nozzle; and (3) in a minor degree, on the temperature of the container and its contents at the time of release. It is significant that 65 per cent of the weight of the released unimpinged spray was made up of particles in a range of ten microns or less in diameter, indicating that a significant portion of the total material is in the range which may reach the alveoli, that is, the functional portion of the lung.

Minimal quantities of the dry spray were collected from 1 cu. ft. of the air available for inspiration following either the 10-second spray release (0.03 to 0.4 mgs.) or 30-second spray release (0.2 to 2.0 mgs.), calculated as the quantities of the spray inspired in the succeeding 5 minutes. Such amounts are considered insufficient to produce adverse physiological effects. The collection of minimal quantities of spray from the atmosphere would indicate that a large percentage of the particles are impinged on the hair or settle rapidly from the atmosphere after release. A similar conclusion on the rapid settling of the particles from the atmosphere is reached in the case of the animal exposures. No adverse physiological effects were exhibited in the animal tests, in which the administration of the sprays would be considered excessive in comparison to condition of actual human use.

Conclusions

(1) The physical characteristics of the released spray of six types of aerosol hair spray formulations were investigated.

(2) Particle size and distribution patterns of six unimpinged spray types investigated exhibited small variations (less than ten per cent) between types.

(3) Sixty-five per cent by weight of the unimpinged spray consisted of particles measuring ten microns and less in diameter.

(4) The amount of dry spray in 1 cu. ft. of air available for inspiration in the human exposures varied from 0.03 to 0.4 mgs. of dry spray following a 10-second spray release, and from 0.2 to 2.0 mgs. following a 30-second spray release. Such quantities are considered incapable of producing adverse physiologic effects.

(5) No adverse toxicologic, hematologic, gross and microscopic pathologic, or radiographic effects were observed in the acute and 90-day (twice daily) animal exposures.

(6) The data from both the human and animal exposures indicate that the ordinary use of aerosol hair spray preparations of the composition and physical characteristics of those included in our studies poses no problem of safety to users.

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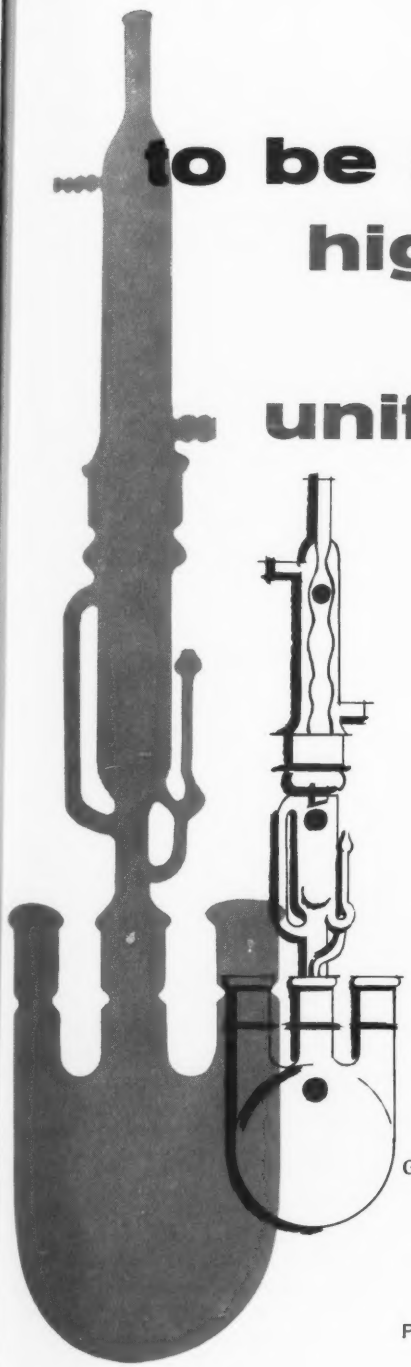

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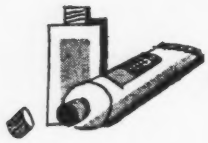

Advancing Therapy

Synthetic Penicillins

Beecham Group Ltd. of London, England, and Bristol Laboratories, Inc., of Syracuse, N. Y., will collaborate in developing synthetic penicillins superior to the natural ones now available.

The decision to collaborate is the result of major technical developments in the synthesis of penicillin in the U. S. and England.

A group of Beecham scientists in England, headed by Mr. F. P. Doyle and Dr. G. N. Rolinson, recently announced the successful production of the basic nucleus of penicillin, 6-aminopenicillanic acid, by an "interrupted-fermentation" process. This process makes possible the production of this basic penicillin material at reasonable cost. Starting with this basic nucleus they synthesized about 200 new penicillins.

In March, 1957, in the U. S., Dr. John C. Sheehan, Professor of Organic Chemistry at Massachusetts Institute of Technology, announced the total synthesis of penicillin.

Dr. Sheehan's total synthesis led to the production of more than ten different penicillins, each with a different "side chain" of atoms attached to the basic nucleus. Recently, Dr. Sheehan has also succeeded in removing the natural side chain from penicillin-G.

Neither the American nor the British development has yet resulted in a commercial product but there is considerable promise already shown in some synthetic forms which are active against so-called "resistant staph."

Synthetic Analgesics

Analgesic properties have been found in two new types of chemical structures. Investigators at Irwin, Neisler find promising analgesic activity in aminopyridine derivatives; Lederle scientists report that certain *N*-(*tert*-aminoalkyl)-propionanilides are potent analgesics.

Animal tests show that 2-(β-hydroxyphenethylamino) - pyridine (phenyramidol) is as potent a pain killer as codeine, with muscle relaxant properties. Irwin, Neisler's Allan P. Gray and Donald E. Heitmeier told the Division of Medicinal Chemistry at the 135th ACS National meeting at Boston.

Tests in mice proved the compound to be active either orally or by injection. It seems to be less toxic than codeine, has no cardiovascular actions, doesn't potentiate barbiturates, has no anticonvulsant properties, and so far, animal tests show no addiction.

Preliminary tests in humans confirm that the compound is a moderately potent analgesic and useful in the treatment of musculoskeletal conditions.

Lederle's William B. Wright, Jr., Herbert J. Brabander, and Robert A. Hardy, Jr., reported that animal tests indicate that *N*-(1-methyl-2-piperidinoethyl) - propionanilide hydrochloride (phenampromid) has analgesic powers similar to meperidine, while *N*-[2-(methylphenethylamino)-propyl]-propionanilide sulfate (diampromid) approaches the potency of morphine.

Clinical studies with human patients are now in progress. Tests so far confirm that the compounds have pain killing ability rivaling that of meperedine and morphine. Toxicity seems to be in the same range as meperidine. The compounds have been submitted to the National Research Council's Committee on Drug Addiction and Narcotics to study addiction.

Steroid Diuretic

An acetylthio derivative of steroid-17-spirolactone is 50 times more potent a diuretic than the parent compound when given orally, John A. Cella and C. M. Kagawa of G. D. Searle told the Division of Medicinal Chemistry at the 135th National ACS meeting in Boston.

Research indicates that aldosterone, a potent steroid from the adrenal glands, is the primary hormone regulating electrolyte metabolism in man. Apparently it acts by causing sodium to be reabsorbed and potassium to be excreted from kidney tubules. Too little hormone means dangerous loss of sodium, while too much leads to excessive retention of sodium and fluids.

Studies show persons suffering from edema secrete high levels of aldosterone. With this clue, Cella and Kagawa have developed compounds which, in animals, block the action of aldosterone. Among the first were 3-(3-oxo-17α-hydroxy-4-androsten-17α-yl)propionic acid γ-lactone (SC-5233), and its 19-nor analog (SC-8109). The new compounds all have a spirolactone group at carbon 17. The early spirolactones showed oral activity only with large doses.

Finally, the acetylthio derivative, tagged SC-9420 by Searle, and the Δ′ derivative (SC-8911), showed 10 to 50 times the oral potency of the early spirolactones.

Evidence so far indicates that the new compounds act by competitive inhibition. The spirolactones probably displace or prevent aldosterone-like steroids from occupying key receptors sites in the kidney. Some spirolactones show activity against experimental hypertension in rats.

Serum Cholesterol

Twenty-two young male subjects were studied by R. Perkins, I. S. Wright and B. W. Gatje (*J.A.M.A.*

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U.S.I. CHEMICAL NEWS

May ★ A Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1959

First Technical Book On Aerosols Published

For the first time, complete information on packaging products in pressurized containers has been set down in one place — a 411-page book by Herzka and Pickthall titled "Pressurized Packaging (Aerosols)," now being sold.

Chapters give detailed information on propellents, containers, valves, filling methods, laboratory procedures, emulsion systems and perfumes. Graphs, charts and photos illustrate all chapters, which are followed by lists of literature references and significant patents.

Formulations — over 200 in all — are included, on a wide range of products from insecticides and paints to cosmetics, perfumes and foods. Appendices cover common abbreviations, technical terms, trademarks and trade-names, and aerosol producers throughout the world. The book is considered an extremely valuable reference for both research and development and management groups.

New U.S.I. Sales Office Opens in San Francisco

U.S.I. has established a San Francisco sales office, managed by Kenneth Fietz, who has been a representative of the company's New York Sales Division for the past 16 years. The new office, located at 220 Montgomery Street, was created to serve U.S.I. customers in central and northern California, Oregon and Washington. This office is tied in with U.S.I.'s automated communications system through Pacific Coast headquarters in Los Angeles. This will facilitate the processing of orders and messages by the company's offices and plants in all parts of the country.

H^3-Labeled Methionine Gives Clue to Protein Synthesis in Cells

In a recent study of protein synthesis in the cells of adult mice, DL-methionine labeled with tritium (H^3) was injected into test animals and then traced by radioautography methods. Results revealed that the most active protein synthesis involving methionine takes place continuously and independently within the cytoplasm and nuclear chromatin. Very little protein is synthesized from methionine in the nucleolus.

In this particular study, tritium was used as the tracer element because its low β-ray energy allows good radioautographic resolution. Previous investigations with S^{35}-labeled methionine had shown only that this amino acid is continuously being incorporated into protein in all cells. However, the exact distribution of synthesis in the nucleus and cytoplasm could not be determined up to this time because the high β-ray energy of S^{35} prevented good resolution.

U.S.I. Starts Up 75-Million-Lb. Polyethylene Plant at Houston

Low and Medium Density Resins Being Produced by High Pressure Process. Plans Already Underway to Double Capacity.

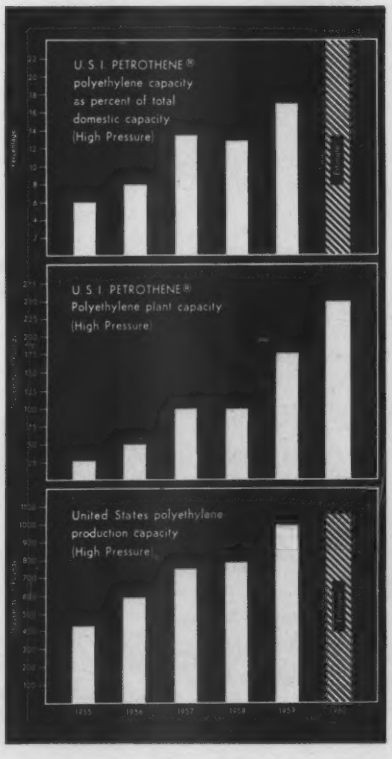
U.S.I.'s new high pressure polyethylene plant has just been put into operation at Houston, Texas, to make 75 million pounds per year of PETROTHENE® resins.

The Houston installation was rushed into production some six to eight weeks ahead of schedule when demand for PETROTHENE resins began to outrun supply late in 1958.

As a result of this demand, a major expansion is already being planned, to double the new plant's capacity and bring the company's PETROTHENE output in Houston to 150 million pounds of high pressure polyethylene per year. At Tuscola, Illinois, U.S.I. now turns out about 100 million pounds of polyethylene annually. Thus, when the planned expansion at Houston is completed late in 1960, total U.S.I. capacity will be 250 million pounds of high pressure resins per year. This will make the company the second largest polyethylene producer in the country.

The new plant is well situated on the Houston Ship Channel for shipment of resins by all means of transportation. Export shipments are facilitated by the extensive port facilities available in Houston. The new installation is assured of a plentiful supply of ethylene — the major raw material — from salt dome storage facilities.

MORE


U.S.I. PETROTHENE® polyethylene capacity as percent of total domestic capacity (High Pressure)
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United States polyethylene production capacity (High Pressure)

Oils Solubilized in Alcohol By New Patented Technique

Drug and cosmetic manufacturers can now formulate water-clear, non-aqueous products containing both oils and low-molecular-weight alcohols, via a new solubilizing technique described in U.S. Patent No. 2,865,859 issued recently.

According to the patent, it has never been possible commercially to prepare cosmetic or industrial solutions containing these alcohols plus large quantities of oil. Layering has always taken place. The technique described makes miscibility possible by including low-molecular-weight aliphatic alcohol esters of high-molecular-weight fatty acids.

Mixtures of esters such as ethyl laurate, butyl myristate, amyl oleate, propyl linoleate or isopropyl palmitate are cited. The resulting solutions would contain 20-50% oil, 20-50% low alcohol and 5-20% ester. The oils may be of any class — animal, vegetable or mineral — and the alcohols preferably in the one to five carbon group, such as ethanol, methanol and isopropyl alcohol.

Suggested formulations are given for cosmetic compositions which are claimed highly stable over a wide temperature range for long periods, without separation. Examples include sun-screening compounds, hand lotions, hair preparations, soaps, colognes, antiperspirants and after-shave lotions.

Other suggested fields of applications include metal working compounds, coatings, dry cleaning fluids, hydraulic fluids, biocides and lubricants.

NaK Basis of Prefab High-Temperature Test Loop

A high-temperature test loop, which uses NaK (sodium-potassium alloy) as the circulating medium, is now available as a package unit for research and study purposes.

The loop, designed for 1,000° F, can be employed to examine NaK's natural circulation characteristics, to study oxygen solubility in the alloy, to analyze flowmeter and pump performance, expansion treatment and piping arrangement, to investigate corrosion, mass transfer and metal stress, to design heat exchangers, and to develop pumps.

The unit consists of heaters and coolers, heat exchangers, EM pumps and flowmeters, cold trap, plugging indicators and instruments.

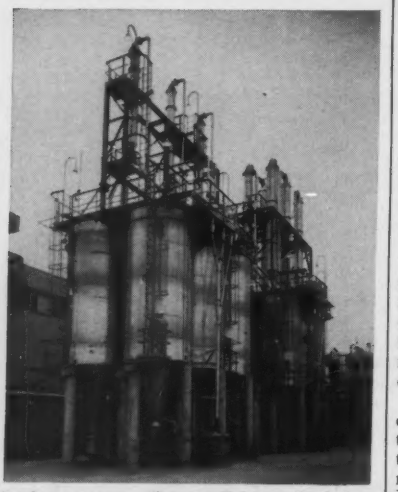
May ★ **U.S.I. CHEMICAL NEWS** ★ 1959

CONTINUED *Polyethylene*

Other Resins Under Consideration

The company is now producing low density (.913 – .924) and medium density (.925 – .929) resins at the Houston unit. However, extensive research work has been done on the new high density polyethylenes and a process has been developed which is believed superior to any now used, both from a product quality and production cost standpoint. The process has not yet been commercialized due to the current market conditions on high density materials. U.S.I. is also studying polypropylenes and other polyolefins in pilot plant, and hopes to have more to say about them later in the year.

In less than four years U.S.I. has advanced from a nonproducer of polyethylene resins to its present position as third largest producer in the field. Commencing with an output of 26 million pounds in 1955, production increased to 50 million in 1956, 100 million in 1957, and now 175 million pounds. When the contemplated expansion at Houston is completed, the company will have realized a total increase in production capacity of some 900% since 1955.

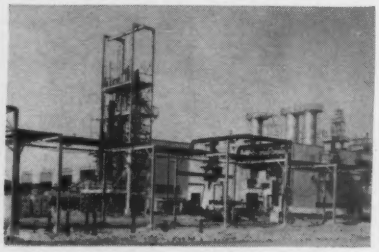


Product storage silos at U.S.I. polyethylene plant, Houston, Texas.

Film Grades a Specialty

Although U.S.I. makes a full line of resins for all applications, much of its growth in polyethylene has been based on special efforts to develop improved coating and film grade resins. Recently the company pioneered a technique for producing crystal-clear cast film. This material has excellent potential in the huge bread wrap field and other large-volume overwrap markets.

Tailor-making resins for specific purposes was originally and still is one of the distinguishing features of U.S.I. as a polyethylene producer. In all, the company markets some 70 resins today, each varying somewhat in melt index, density, strength, clarity, gloss, slip, stiffness and other properties.



Gas-producing area at Houston plant.

Two New Aerosol Formulas Contain Anhydrous Alcohol

Two new formulations — one for a white shoe polish, the other for a stocking-run stopper — have been developed by one chemical manufacturer for consideration by aerosol packagers.

The run-stopping spray consists of equal parts of anhydrous ethanol and a fast-drying adhesive, plus propellant, coloring and perfume. The formula is said to be nonflammable, and is considered stable, although stability tests have not been completed as yet. Recommended filling pressure and method of application are given.

The shoe polish spray — containing an ethanolic solution of PVP/VA, a sebacate, titanium dioxide, glycerine, isopropanol, acetone and propellant — is claimed to eliminate messy handling and to allow easy touch-up. Filling techniques, valve types and pressure are suggested.

TECHNICAL DEVELOPMENTS

Information about manufacturers of these items may be obtained by writing U.S.I.

Radioactive crystalline C^{14}-L-glutamine can now be obtained for in vivo studies of blood-brain barrier permeability and biological utilization of glutamine by brain and other organs. Specific activity of product is 27.8 μ/mg. **No. 1470**

New carbon-monoxide-poisoning test kit now on market determines extent of CO poisoning in a minute by testing exhaled air or in under five minutes by testing blood sample. Color change in treated silica gel indicates % CO in blood. **No. 1471**

Reactor fuel technology is covered in new, 120-page volume now being sold. Includes papers and discussion on economic fuel selection, blanket fuel systems, types of uranium systems, types of fuel elements, cladding and canning. **No. 1472**

Phosphorus pentasulfide safe-handling practices are described in 14-page safety data booklet which can now be purchased. Discusses hazards, protective equipment, containers, waste disposal, first aid, medical care. **No. 1473**

A circular, slide-rule-type of device, which predicts whether a chemical reaction is possible for 10,000 different chemical equations, is now available to chemists and chemistry students. Complete use instructions given. **No. 1474**

Refined ethylene of 99.5% minimum active-ingredient content is described in new data sheet now being offered. Data includes specifications, properties, shipping information, uses plus references on use as ripening agent. **No. 1475**

New analyzer, said to determine amounts of over 20 amino acids in a protein hydrolysate in only 22 hours, is described in new brochure. Results claimed consistent within 2-3%. Typical run shown. Specifications given. **No. 1476**

Cold caustic pulping of mixed hardwoods is detailed in technical report now offered. Includes complete process description, equipment data, flow sheet, quality control tests. Discusses results of studies on pulping variables. **No. 1477**

Niobium and its compounds are described in new book now being sold. Chapters cover sources, supply, economics, extraction, separation, metal preparation, impurities, properties, plating, alloys, reactions, nuclear uses. **No. 1478**

Over 125 radioactive measuring instruments are listed in new 76-page catalog. Detecting, counting and recording instruments are described. Included are systems for research, medicine and education. **No. 1479**

PRODUCTS OF U.S.I.

POLYETHYLENE RESINS

PETROTHENE® is the registered trademark for U.S.I.'s polyethylene resins. PETROTHENE resins are used in a wide variety of end uses such as film extrusion, pipe extrusion, extrusion coating, wire and cable coating, calendering, injection molding, blow molding, thermoforming and compression molding.

OTHER PRODUCTS

Heavy Chemicals: Anhydrous Ammonia, Ammonium Nitrate, Nitric Acid, Nitrogen Fertilizer Solutions, Phosphatic Fertilizer Solution, Sulfuric Acid, Caustic Soda, Chlorine, Metallic Sodium, Sodium Peroxide, Sodium Sulfite, Sodium Sulfate.

Pharmaceutical Products: DL-Methionine, N-Acetyl-DL-Methionine, Urethan USP, Riboflavin USP, Intermediates.

Alcohols: Ethyl (pure and all specially denatured formulas); Anhydrous and Regular Proprietary Dentured Alcohol Solvents SOLOX®, FILMEX®, ANSOL® M, ANSOL PR.

Organic Solvents and Intermediates: Normal Butyl Alcohol, Amyl Alcohol, Fusel Oil, Ethyl Acetate, Normal Butyl Acetate, Diethyl Carbonate, DIATOL®, Diethyl Oxalate, Ethyl Ether, Acetone, Acetoacetanilide, Acetoacet-Ortho-Chloranilide, Acetoacet-Ortho-Toluidide, Ethyl Acetoacetate, Ethyl Benzoylacetate, Ethyl Chloroformate, Ethylene, Ethyl Sodium Oxalacetate, Sodium Ethylate, ISOSEBACIC® Acid, Sebacic Acid, Urethan U.S.P. (Ethyl Carbamate), Riboflavin U.S.P.

Animal Feed Products: Antibiotic Feed Supplements, BHT Products (Antioxidant), Calcium Pantothenate, Choline Chloride, CURBAY B-G®, Special Liquid CURBAY, VACATONE®, Menadione (Vitamin K_3), DL-Methionine, MOREA® Premix, Niacin USP, Riboflavin Products, Special Mixes, U.S.I. Permadry, Vitamin B_{12} Feed Supplements, Vitamin D_3, Vitamin E Products, Vitamin E and BHT Products.

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169: 1731, 1959) during a three-phase experiment lasting 19 weeks. After a five-week control period, they were given, in sequence for seven-week periods, a daily dietary supplement of an emulsion containing pyridoxine hydrochloride and 45 Gm. of either corn oil or safflower oil. The slight decrease observed in average serum cholesterol level was not found to be statistically significant.

Anti-Tumor Royal Jelly

Cancer investigators have obtained "unequivocal" proof that the growth of tumors can be arrested under laboratory conditions by royal jelly.

In the laboratory three Canadian investigators have found that the jelly completely inhibits the spread of cancerous cells in mice, provided the jelly is injected into the animals at the same time as the tumors.

The findings were published in the British science journal, "Nature," under the names of Gordon F. Townsend, of Ontario Agriculture College; Joseph F. Morgan, of the hygiene laboratory, Ottawa, Department of National Health and Welfare, and Barbara Hazlett, of the therapeutics department, University of Toronto. The report says:

"This appears to be the first unequivocal demonstration of anti-tumor activity in royal jelly. The results have been confirmed repeatedly on nearly 1,000 mice during a two-year period, and show a striking effect: either all the mice die quickly or all survive."

Progestational Hormones

A new compound, 6α-methyl-17α-acetoxyprogesterone, trade - named Provera by Upjohn, is a highly active progestin based on its ability to promote a secretory endometrium and to prevent ovulation in rabbits, according to L. E. Barnes, F. L. Schmidt and W. E. Dulin (*Proc. Soc. Exptl. Biol. Med.* 100: 820, 1959). Subcutaneously this compound is 60 to 8 times and orally 60 to 75 times as active as 17α-acetoxyprogesterone (Prodox, Upjohn) in the McPhail assay. The ability of the 6-methyl compound to inhibit ovulation in rabbits is at least 20 times as great as that of progesterone subcutaneously, while 17α-acetoxyprogesterone (Prodox, Upjohn) in the McPhail assay. The ability of the 6-methyl compound to inhibit ovulation in rabbits is at least 20 times as great as that of progesterone subcutaneously, while 17α-acetoxyprogesterone is 7 times as active as progesterone.

Treating Leukorrhea

According to Godts (*Belg. tijdschr. geneesk.* 14: 1085, 1958) detergents are widely used in the treatment of leukorrhea resulting from vaginal infections. He defines detergents as substances capable of reducing the surface tension of water. The therapeutic use of detergents consists in, first, cleansing the vagina with a tampon containing a detergent solution; then a tampon that has been saturated with 5 per cent solution of detergent is inserted into the vagina and is left in place for from 12 to 24 hours, this is followed by daily vaginal irrigations with a detergent solution for one week.

The 90 patients with leukorrheal vaginitis, treated with detergents and reviewed in this paper, included 30 with infections due to C. albicans, 30 with trichomoniasis, and 30 with mixed infections. Treatment with detergents produced excellent results in 71 of the 90 patients—in 26 of those with moniliasis (C. albicans), in 24 of those with trichomoniasis, and in 21 of those with mixed infections. Good results were obtained in 9 additional patients (including 5 with mixed infections), whereas in the other 10 patients the effects of treatment with detergents were poor. On the basis of these results, the author recommends the use of detergents in the aforementioned forms of leukorrheal vaginitis.

Topical Oxytetracycline—Polymyxin

A powder, containing a mixture of oxytetracycline hydrochloride and polymyxin B sulfate, has been used on by S. W. Barefoot (*A.M.A. Arch. Dermatol.* 79: 455, 1959) 5,691 patients under circumstances in which preventing or combating bacterial infection was desired. It was found to be effective for these purposes.

The length of time over which the powder mixture was used varied from one application to over five years' continuous use in one patient. Several patients have used it for six months or more.

In only one instance did a patient exhibit any manifestations of an allergic skin reaction. This was of a very mild nature. Patch test to the powder mixture gave a weakly positive reaction, whereas the individual antibiotic components gave no reaction. Subsequently, she showed no reaction to the systemic administration of oxytetracycline.

It may be emphatically stated that oxytetracycline hydrochloride has a very low sensitizing index on the skin and is safe for topical therapy.

Alpha-Ethyl-Thioisonicotinamide

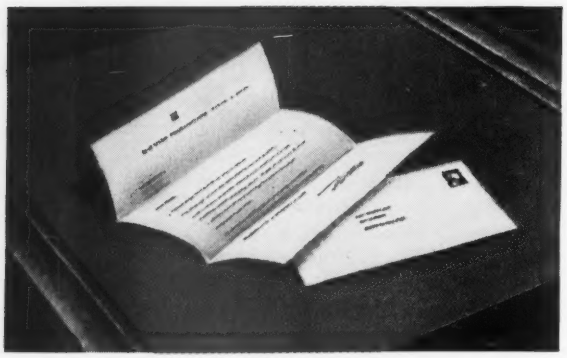
A clinical investigation was carried out by G. Brouet et al. (*Am. Rev. Tuberc.* 79: 6, 1959) with the administration of alpha-ethyl-thioisonicotinamide in 102 patients with pulmonary tuberculosis. Alpha-ethyl-thioisonicotinamide was administered orally, the usual regimen being 1 Gm. daily, or 4 tablets. This compound was often not well tolerated and gave rise to side-effects, such as anorexia, nausea, or gastric irritation; the patients either ceased to gain w e i g h t or actually lost w e i g h t. There was no evidence, though, that it had a toxic effect on the liver, the kidneys, or the hematopoietic system.

The treatment with alpha-ethyl-thioisonicotinamide had a beneficial effect on the clinical course, on the roentgenologic aspects, and on the bacteriological findings of patients with pulmonary tuberculosis. The action of this drug, however, was not constant. The condition of some patients did not improve, and the emergence of bacterial resistance to alpha-ethyl-thioisonicotinamide occurred in several patients, but without evidence of decreased sensitivity to other bacteriostatic agents. After the administration of other orthodox antimicrobial drugs rapid improvement occurred in these patients.

New Creamalin (Winthrop) is a palatable antacid tablet containing 320 mg. special aluminum hydroxide gel and 75 mg. of magnesium hydroxide, supplied in bottles of 50, 100, 200 and 1000.

Soma Tablets (Wallace) contain 350 mg. of carisoprodol for the relief of pain and stiffness in muscles and joints. The preparation is available in bottles of 50 tablets.

Tentone (Lederle), methoxypromaxine maleate, is an intermediate potency tranquilizer, available as 10, 25 and 50 mg. tablets supplied in bottles of 100 and 1000.



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Skin Research

Anatomy of the Skin 1957

From an exhaustive review and bibliography by H. Pinkus (*Dermatologica* 118: 44, 1959):

On the basis of formulas developed earlier by *Skerli,* he and *Kulcar* give values for absolute and relative surface areas of body regions. The surface of the trunk was found fairly constant as 26.15 per cent in males and 25.8 per cent in females. The values for head and neck vary from 12.4 per cent in males 6-10 years old to 9.15 per cent in males 16-55 years old. The corresponding values for females are 12.2 per cent and 9.8 per cent. The average values for total body surface at the same ages are 9320 cm^2 and 18,600 cm^2 for males and 9525 and 16,000 cm^2 for females.

The 23rd Convention of the German Dermatological Society had as one of its themes histochemistry of the skin. Reviews were given by *Steigleder* on epidermis and adnexa, *Braun-Falco* on conective tissue, and *Spier, Caneghem* on keratinization. Eight other papers were read. *Kopf* studied the distribution of alkaline phosphatase in normal and pathologic human skin. *Braun-Falco* describes a method for histochemical demonstration of aminopeptidase in the skin. Results are positive in eccrine glands and ducts first, then in prickle cells, later in the entire epidermis, adnexal epithelium and connective tissue cells.

Goldman et al discuss diascopy in dermatology and state that skin color depends on 7 physical factors (reflection at the surface, absorption in the surface layer, transmission, diffusion, scattering, thickness of skin, structure of skin) and 7 chemical factors (carotene, melanin, melanoid, oxyhemoglobin, reduced hemoglobin, blood plasma, subcutaneous fat). A *Hardy* type recording photoelectric spectrophotometer was employed to investigate the influence of diascopic pressure on skin color. *Jolles, Mitchell* call attention to a hand Tintometer through which the illuminated skin surface is compared with a standard white surface. The color of the latter can be modified by interposing a graded series of red, yellow, and blue filters until color is matched. Results are reproducible. *Heite* used a remission photometer equipped with a 15 cm. Ulbricht sphere for methodical determination of pigmentation and erythema and recommends this instrument for routine use.

The various stages of the keratinization process were examined by several authors with a variety of methods. *Selby* examined thin sections of human foot pad epidermis with the electron microscope. As the epidermal cells approach the cornified layer, mitochondria, cytoplasmic particulates, and endoplasmic reticulum decrease in quantity. Small spherical granules and large irregular keratohyalin granules appear in the stratum granulosum. Tonofilaments appear equally plentiful in basal cells and in cells of higher layers, where they become organized into tonofibrillae. These lose electron density and filamentous substructure in the stratum granulosum. The cells of the stratum lucidum contain exclusively this altered (keratinized) variety of tonofibrils, and the cells of the stratum corneum consist almost entirely of a homogeneous mass of transformed fibrillae. *Laden, Gethner, Erickson* also used the electron microscope and conclude that keratohyalin granules are precursors of keratin and are transformed directly into keratin fibers. *Lutenbacher* calls attention to the fact that the keratohyalin granules reflect light and that their presence or absence is mainly responsible for the whitish color of skin in contrast to the redness of mucosae or the cock's comb.

Staricco, Pinkus counted melanocytes in sheets of human epidermis separated from the corium by 2N sodium bromide solution and stained by the dopa method. In 62 specimens representing 7 major body regions individual counts ranged from 400 to 2784 cells per mm^2. Mean values varied from 754 on the abdomen to 668 on the male genitals for an overall mean of 1155 cells per mm^2. There were no significant numerical differences between white and Negro skin. Melanocytes are dendritic cells and always distinctly different from malpighian cells. Melanin granules normally are transferred into malpighian cells and may be found in all cells up to the stratum corneum in heavily pigmented skin. This transfer may be blocked under pathologic conditions. *Breathnach* used epidermal sheets isolated from the flexor surface of the upper forearm and found a mean value of 2024 melanocytes per mm^2. Significantly fewer melanocytes are present in freckles than in the surrounding normal skin, but the cells are larger.

Staricco used weak doses of thorium X to stimulate pigment activity. The melanocytes became larger and more active, but did not increase in number, unless there was acanthotic response of the epidermis. No transformation of melanocytes into keratinocytes was observed. Dendritic cells containing melanin granules and exhibiting tyrosinase activity ascended into the higher layers and were desquamated.

Van Dujn points out that several of the intermediate products in the conversion of dopa to melanin are highly soluble. Experiments to iden-

tify localizing factors which prevent the elution or dispersion of these products have remained inconclusive. *Szabo* could demonstrate tyrosinase in the melanocytes of human epidermis and mucosa without previous stimulation by ultraviolet rays. The number of active cells decreased in the following order: cheek, forehead, ear, nasal mucosa, scrotum, penis, neck, chest, arm, thigh. In strongly positive regions the number, shape, and distribution of tyrosinase and dopa positive cells is similar. *Lillie* finds that reduction of ferric salts and binding of the resulting ferrous compounds is a specific reaction of melanins. Subsequent treatment of tissues with ferricyanide causes a specific green coloring of the melanin granule. This reaction is abolished by pretreatment of tissues with chromates and probably depends on quinhydrone groupings.

Van Scott et al. determined the proportion of resting to growing hairs on human scalp by grasping about 50 hairs with forceps and extracting them at one time. In normal scalps 63-91 per cent (median 86 per cent) of hairs are in the growing phase in persons 18 to 38 years old. Variations are greater (24-96 per cent) in patients with neoplastic disease. The effects of amethopterin and ionizing radiation on hair roots are described. *Heilingotter* confirms *Hirsch's* observation that suspended hair not only lengthens, but shows a torsion effect when weighted. He attributes this effect to the spiral structure of the keratin molecule. *Piredda* finds that birefringence of thin hairs usually is greater than that of thicker ones. Relation of thickness and birefringence shows individual differences, but is rather constant in each person. The paper contains other interesting data.

Birbeck, Mercer report on the electron microscopy of the human hair follicle in three papers illustrated with excellent photographs.

Wassermann gives an excellent review of the origin and structure of connective tissue and of the interrelationship of fibers and ground substance. Contributors from several European countries attended a meeting of the French Dermatologic Society at Strasbourg and discussed the normal structure and diseases of connective tissue.

Hall, on the basis of chemical determinations, supports the thesis that collagen can be converted into elastin. *Teller* et al. used the electron microscope for examination of exposed skin of various ages. They did not find an increase of elastic fibers and conclude that the increased avidity of senile skin for elastic stains is due to changes in collagen and ground substance. *Keech, Reed* continued their studies of conversion of collagen into elastin by various agents in vitro. They conclude that collagen and elastin are not two separate and distinct entities, but are intimately associated in the living tissues.

Davis, Lorincz confirm the observation of *Pinkus* that stripping of the keratin layer with Scotch Tape improves visualization of the capillaries. Since at the same time the barrier action of the skin is abolished temporarily, pharmaco-physiologic responses of the capillaries can be studied with advantage.

Tindall, Kunkle determined pain spot density in the skin of 21 volunteers in repeated examinations over a period of four months. There were great individual variations, but good symmetry. Anesthetic spots were rather constant in their localization; they probably represent gaps in the fiber network. *Belikova* finds that the number of active cold spots in human skin can be increased by cooling as well as by conditioned reflex. *Shelley, Arthur* report that itch points can be determined with electrodes and are characterized by reacting to the insertion of a cowhage spicule with minimal delay. Histologically, there is a rich aggregate of non-myelinated C-fibers in the subepidermal area.

Progesterone and Acne

It has been shown that stilbestrol decreases the activity of human sebaceous glands and that consequently patients with acne vulgaris are improved (Jarrett, 1955).

Progesterone has been used in the treatment of this condition and some authors have described good results (Belisario, 1951; Newman and Feldman, 1954). Experimental evidence of the effect of this hormone on the sebaceous glands of rats has given conflicting results (Ebling, 1948; Haskin *et al.*, 1953). In view of this, A. Jarrett (*Brit. J. Dermatol.* 71: 102, 1959) investigated the effects of progesterone on human sebaceous glands by the methods employed in the stilbestrol series. The experimental findings have been correlated with the clinical state of acne patients.

Haskin *et al.* (1953) stated that progesterone had almost the same stimulating activity as testosterone on rats' sebaceous glands.

In the present series it has been shown that intramuscular testosterone increases the activity of sebaceous glands and aggravates the lesions of acne vulgaris.

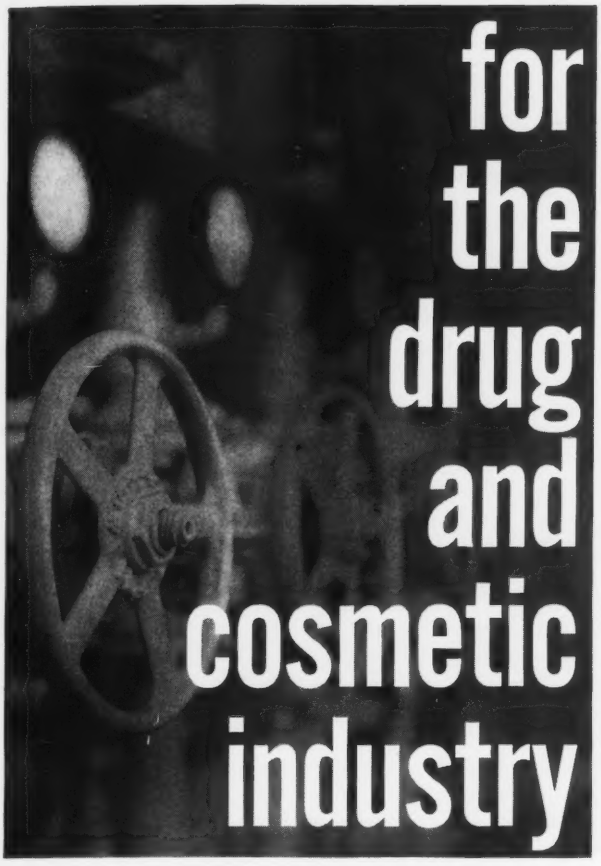
Progesterone, intramuscularly in comparable dosage to testosterone, is without effect on sebaceous glands, and does not influence the clinical state of acne patients.

From the findings reported there is no evidence that progesterone is responsible for acne in female patients, that it causes the premenstrual fluctuations, or that it benefits patients suffering from acne.

Steroid Metabolism in Skin

As regards steroid metabolism in the skin, the relationship of the physiological activity of the specific hormone with its possible chemical transformations has always been of interest. The anti-inflammatory effects of cortisone and hydrocortisone are not markedly different when these compounds are administered systemically. Yet, despite apparently comparable absorption of these hormones through the skin topical hydrocortisone is impressively anti-inflammatory in the treatment of certain eczematous dermatoses while locally applied cortisone is relatively ineffective. It has been postulated that the difference in topical therapeutic efficacy of these compounds might be related to differences either in the pathways of metabolism or in the speed of metabolic inctivation of these steroids in the skin.

The study by F. D. Malkinson, M. W. Lee and I. Cutukovic (*J. Invest. Dermatol.* 32: 101, 1959) indicates that the skin metabolizes cortisone more readily and perhaps more rapidly than it does hydrocortisone, suggesting that speedier inactivation of cortisone or cortisone metabolites may take place. Obviously if this rate of metabolic inactivation in the skin were sufficiently rapid, the anti-inflammatory effect of this steroid could be drastically reduced.



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Industry's Books . . .

American Drug Index 1959, *by Charles O. Wilson, Ph.D., University of Texas, and Tony Everett Jones, Ph.D., Director of Pharmaceutical Research, Carbisulphoil Co., 671 pp., J. B. Lippincott Co., Phila., Cloth,* **$5.75.**

The American Drug Index has been prepared for the identification and correlation of the many pharmaceuticals available to the medical and allied professions. All names used for a pharmaceutical occur in alphabetical order with the pertinent data given under the brand name and the name by which it is made available. Data included are generic name, chemical name, manufacturer, pharmaceutical forms, size, dosage and use. Generic names occur in alphabetical order and here the recognition of the drug is indicated by U.S.P., N.F., N.N.D., and A.D.R. This work should be most useful to physicians, pharmacists, dentists, nurses, and to sales personnel, students and teachers in the fields incorporating pharmaceuticals.

Processing Of Thermoplastic Materials, *Edited by Ernest C. Bernhardt, Dr. Ing., E. I. du Pont de Nemours & Co., Inc., 690 pp., Reinhold Publishing Corp., New York, (1959), cloth,* **$18.**

This reviews the engineering fundamentals on which the design of plastics processing equipment is based, and demonstrates the practical application of these fundamental concepts in the analysis of thermoplastics processing problems. It presents the contributions of experts in the various branches of this field. The book is aimed at engineers, but does not require the reader to possess previous knowledge in plastics processing technology. This is the second of a series of plastics engineering volumes sponsored by the Society of Plastics Engineers, Inc.

Trading Stamp Practice And Pricing Policy, *Edited by Albert Haring and Wallace O. Yoder, Indiana Business Report No. 27, 390 pp., Bureau of Business Research, Indiana University School of Business, Bloomington, Indiana, cloth* **$6.**

Psychotherapeutic Drugs *by Ashton L. Welsh, M.S., M.D., Assistant Professor of Dermatology and Syphilology, University of Cincinnati, 139 pp., Charles C. Thomas—Publisher, Springfield, Ill., (1958), cloth,* **$4.75.**

The author presents this monograph with the hope that description of the various psychotherapeutic agents, their indications for use, and their side effects will be so completely described that physicians everywhere may be guided in prescription and alerted to manifestations of reaction. The book is divided into five parts, each part devoted to a discussion of one of the major groups of tranquilizers. I. Phenothiazines. II. Rauwolfia-Alkaloids and Fractions. III. Substituted Propanediois. IV. Diphenylmethane Derivatives. V. Ureides and Amides.

Statistical Quality Control— An Introduction for Management, *by Douglas H. W. Allan, American Iron and Steel Institute, 129 pp., Reinhold Publishing Corp., New York, (1959), cloth,* **$3.50.**

This is a work for management personnel on quality control: what it is, what it will do, how much it costs and who does it. It covers the subject in nonmathematical terms to enable management to assess the potentials of SQC. The book then discusses the individual methods and their objectives. It also outlines the duties of quality control engineers, and lists sources of information on particular programs. The purpose is to describe each method sufficient to the understanding of its aims and application. It also includes the official report by the American Society for Quality Control Special Committee on Professionalism entitled "The Basic Elements of Work of Quality Control Engineering."

Ataractic And Hallucinogenic Drugs In Psychiatry, *72 pp., World Health Organization, Geneva, (1958), paper bound* **60c.**

This is World Health Organization Technical Report Series No. 152. It contains the collective views of an international group of experts on the subject.

Scale-Up In Practice, *Edited by Richard Fleming, Sun Oil Co., Phila., 134 pp., pocket size, Reinhold Publishing Corp., New York, (1958), cloth,* **$4.50.**

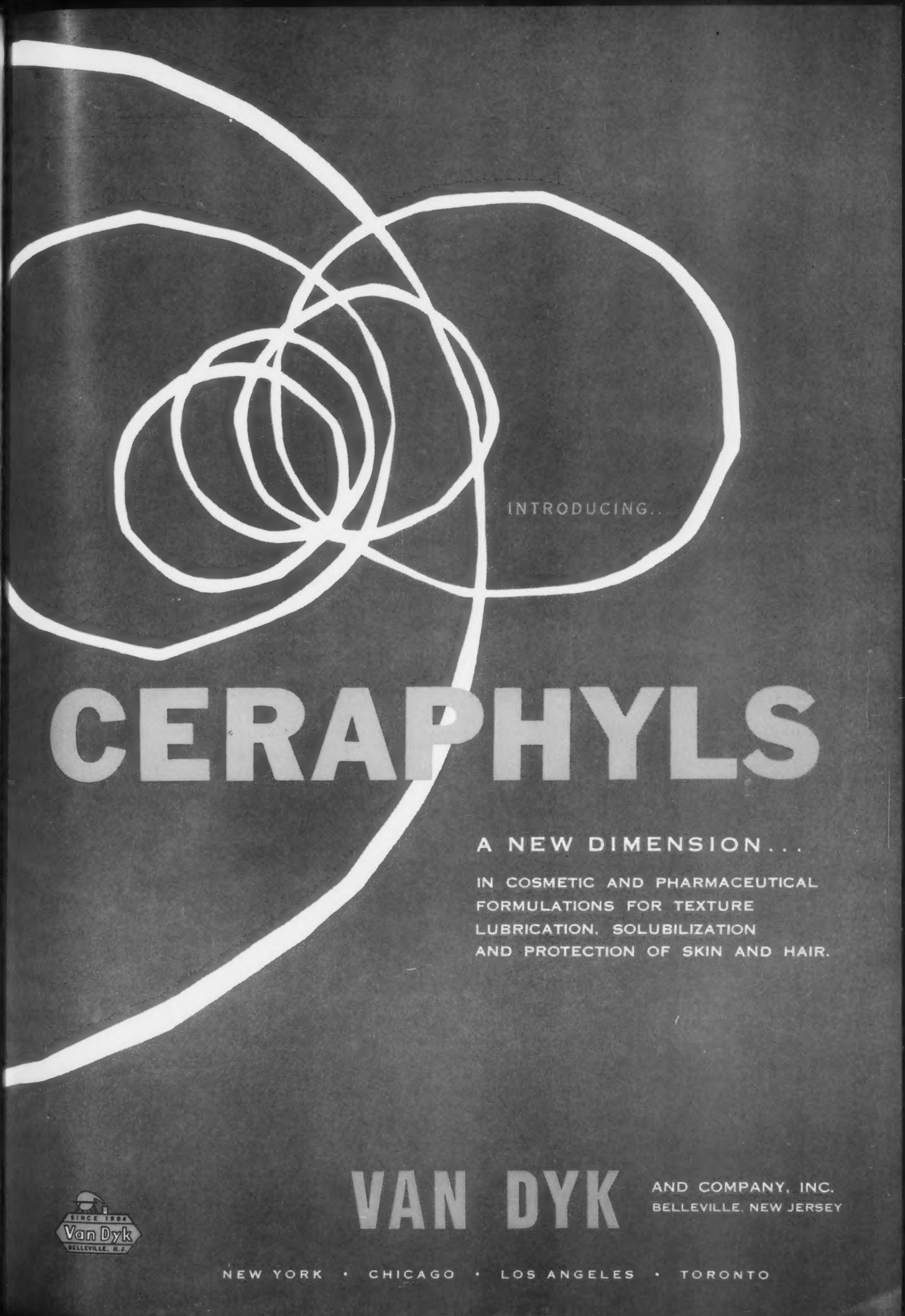
This volume distills the experience of the chemical industry in translating laboratory achievement into commercial success. It is based on an "Experience in Industry" Symposium jointly sponsored by the Philadelphia-Wilmington Section of the American Institute of Chemical Engineers and the University of Pennsylvania. Revealing chapters are included on the factors justifying the operation of pilot plants; a brief review of scale-up theory; simulating operation of processes and equipment with computers; the hazards involved in scale-up; the process and business economics of scale-up; and organizing for scale-up. This is a most useful treatment of pilot plant problems.

Doctor Squibb, the life and times of a rugged idealist, *by Lawrence G. Blochman, 371 pp., Simon And Schuster, New York, (1958), cloth,* **$5.**

From the thousands of pages of copper-plate script in the diary kept by Dr. Squibb, his biographer has reconstructed the story of a founder of a great American corporation who was the antithesis of a robber baron. He was crusader as well as a businessman. He was a Navy doctor who became a chemist in order to get pure drugs, and then became a medical journalist and politician in order to establish high standards of purity and uniformity in pharmacy. His biography—much of it in his own words from his diary—is a highly readable and important part of the making of modern America.

1959-1960 American Druggist Blue Book, *published by American Druggist Blue Book, 250 W. 55th St., New York, free to retail pharmacies, extra copies* **$9.**

This latest edition contains listing of 172,960 products in its 726 pages. The new Blue Book also includes more product descriptions . . . covering data such as composition, uses, dosage, and packaging . . . than ever. More than 1,400 products are described in the new Blue Book, making it an important addition to the pharmacist's reference library.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(*Continued from page 587*)

tramuscular administration, there is a vial of 20,000 units SK and 5000 units SD. The topical form is a vial of 10,000 units SK and 25,000 units SD. A jelly containing the same concentrations per 15 cc. in a base of carboxymethylcellulose is primarily for burns, infected wounds and ulcers. Antibiotics may be incorporated in the jelly. Buccal tablets contain 10,000 units SK and at least 2500 units SD. When administered buccally, only SK is active. The tablets have a pleasant mint flavor and do not sting or irritate the buccal mucosa.

Trypsin and SK-SD both exhibit toxic manifestations. They frequently provoke pyrogenic responses, with temperature rising from 1 to 5° above normal. Painful injections often occur. This is a particular, major disadvantage of SK-SD. The availability of purer streptokinase has considerably improved this situation. A second untoward reaction of SK-SD is the so-called Arthus phenomenon. After at least 100,-

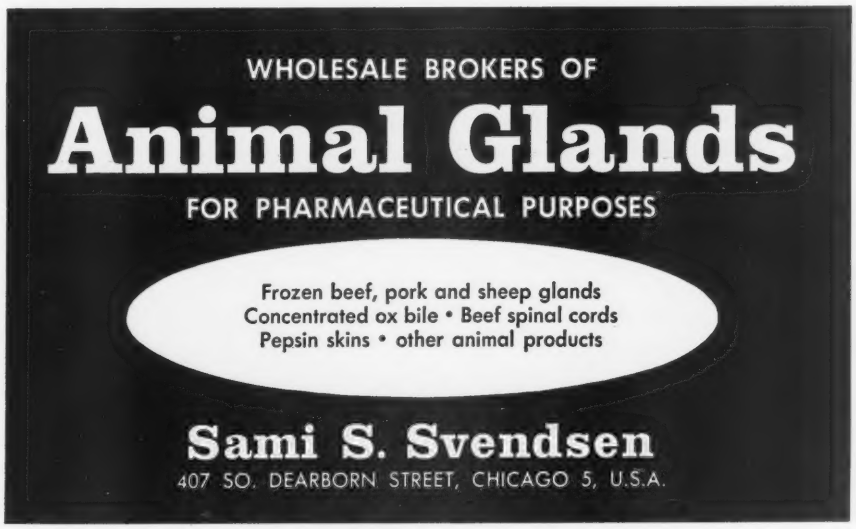
Enzymatic Medicinals

PRODUCT	MANUFACTURER	DESCRIPTION
Chymar	Armour	Chymotrypsin—5000 U. per cc. in 5 cc. vial for i.m. use.
Enzeon	Breon	Chymotrypsin—5000 U. per cc. in 5 cc. vial for i.m. use.
Chymar Aqueous	Armour	Chymotrypsin—5000 U. in sodium chloride for intramuscular use. In 5 cc. vial.
Parenzyme	National	Trypsin—5 mg. per ml. in oil. In 5 ml. vial. Trypsin—25 mg. lyophilized trypsin per 5 cc. aqueous diluent.
Varidase for I.M.	Lederle	Streptokinase—20,000 U. and Streptodornase—5000 U. per vial for 2 cc. diluent for i.m. use.
Parenzyme B Buccal Tablets	National	Trypsin—5 mg. per tablet. In 24's.
Varidase Buccal Tablets	Lederle	10,000 U. Streptokinase and 2500 U. Streptodornase 24's.
Tryptar	Armour	Trypsin. Used topically as solution of 25,000 U. in 25 cc. solution or as powder. Used intrapleurally in selected empyema as 125,000 U. per 3 cc. solution. As 50,000 U. per 10 cc. vial. As 125,000 U. per 20 cc. vial or as 250,000 U. per 30 cc. vial.
Varidase for Local or Topical	Lederle	100,000 U. streptokinase and 25,000 U. streptodornase per vial.
Varidase with Carboxymethyl Cellulose	Lederle	100,000 U. streptokinase and 25,000 U. streptodornase with 15 cc. jar of 4.5% carboxymethylcellulose jelly to keep enzyme in direct contact with affected area.
Parenzyme Ointment	National	Trypsin—2 mg., Chymotrypsin—6 mg., 9 Aminoacridine—2 mg. per gram. In ⅜ and 1 oz.
Dornavac	Merck S.D.	Pancreatic Dornase—100,000 U. lyophilized per vial. For aerosol.
Debrian	Johnson & Johnson	Ficus Protease—Ointment for treatment of burns.
Panafil Ointment	Rystan	Papain—10%, Urea—10% and 0.5% chlorophyll in hydrophilic base. In 1 and 4 oz.
Protoamide	Sherman	Proteolytic enzyme obtained from fresh hog stomach. Used for therapeutic management of nerve root pain. For intramuscular injection.
Hyaluronidase	Various	As 150 Turbidity Reducing Units (T.R.U.) per powder form vial and as 100 mg. and 1 gm. bulk powder.
Alidase	Searle	Hyaluronidase—As 500 viscosity units per powder form vial.
Diffusin	Ortho	Hyaluronidase—As 150 or 1500 T.R.U. per powder form vial.
Hyazyme	Abbott	Hyaluronidase—As 150 T.R.U. per powder form vial.
Infiltrase	Armour	Hyaluronidase—As 150 or 1500 T.R.U. per powder form vial.
Wydase	Wyeth	Hyaluronidase—As 150 or 1500 T.R.U. per powder form vial. As 150 T.RU. per cc. stabilized solution in 1 and 10 cc.
Convertin	Ascher	Pancreatin—62.5 mg., Desoxycholic Acid—50 mg., Betaine HCl—130 mg. in enteric coated tablet.
Bilogen Tablets	Organon	Pancreatin—250 mg., Desoxycholic acid—30 mg. Bile extract—120 mg., Bile acids —75 mg.
Carica-Bile Tablets	Rexall	Papain—1¼ gr., Extract Nux Vomica—1/16 gr., Phenolphthalein—½ gr., Bile Salts —1 gr.—Extract Cascara Sagrada—½ gr.
Canright Tablets	Canright	Pancreatin—5¼ gr., Ox Bile—2 gr., Pepsin—5 gr., Betaine HCl—1 gr.
Doxegest Tablets	Breon	Papain—15 mg., Betaine HCl—65 mg., Ketocholanic acid—12.5 mg., Pancreatin—87.5 mg., Desoxycholic acid—32.5 mg., Hemicellulase—25 mg.
Entozyme Tablets	Robins	Pepsin—250 mg., Pancreatin—300 mg., Bile Salts—150 mg.
Enzypan Tablets	Norgine	Each tablet contains proteolytic potency equivalent to Pancreation N.F.—0.372 gm., Amylolytic potency equivalent to Pancreation N.F.—0.276 gm., lipolytic potency as contained in the Pancreation Ox Bile—0.056 gm., peptic potency equivalent to Pepsin, N.F., 0.009 gm.
Geriatrone Elixir	U. S. Vitamin	Each oz. provides Pancreation—126 mg., Pepsin 126 mg., Liver Concentrate, Vitamins and Glycerophosphates.
Lipan	Spirt	Pancreas (whole hog)—0.5 gm., Vit. B,—1.5 mg. Vit. D.—500 I.U.
Normacid Tabs.	Stuart	Pepsin—32.4 mg., Betaine HCl—440 mg., Methylcellulose—110 mg.
Pancreatin	Parke-Davis	Tablets, Capsules and Granules containing extract of pancreas.
Peptenzyme	Reed and Carnrick	Elixir—259 mg. pepsin per 30 cc. Tablets—Pepsin—65 mg., Pancreatin—32 mg. and Diastrase 50 mg. Powder—Each gram contains 200 mg. pepsin, 100 mg., pancreatin and 100 mg. diastase
Plurizyme Tabs.	Nelson-Boyer	Pepsin (1:15,000)—½ gr. Pancreatin—1½ gr., Ox Bile Extract—2 gr., Dehdrocholic acid—1 gr.
Taka-Combax	Parke-Davis	Capsules—Takadiastase—2½ grs., Vitamins, Liver Concentrate. Elixir—Each 4 cc. contains Takadiastase—2½ grs. plus vitamins
Taka-Diastase Liquid	Parke-Davis	Each fl. oz. contains 20 gr. Takadiastase.
Veracolate Tablets	Standard Labs.	Pepsin—2 gr., Pancreatin—2 gr., Bile Salts—1 gr. Phenolphthalein—0.25 gr., Oleoresin Capsicum—0.025 min.
Neutrapen	Schenlabs	Penicillinase—800,000 units in dry powder form for intramuscular use.
Tryptar Ointment	Armour	Each gram contains Trypsin—5000 U., Chymotrypsin—5000 U., Polymyxin—5000 U. and Bacitracin—500 U. Supplied in ½ oz. tubes.
Cenasert Powder	Central	Papain with vaginal medicaments.
Metasert Insert	Brayten	Papain with vaginal medicaments.
Baculin Tablet	Amfre-Grant	Papain with vaginal medicaments.
Neo-Vagisol Suppositories	Dorsey	Papain with vaginal medicaments.

000 units of SK-SD have been given intramuscularly over a 4 to 6 day period, there is pain, edema and erythema about the injection site. If a subsequent injection is given, the local reaction at the injection site increases markedly, and other injection sites demonstrate a similar inflammation. These reactions are especially marked in patients who have had past streptococcal infections. There have been a few, but far less severe examples of this allergic manifestation with trypsin. A serious limitation to the intramuscular use of Varidase is poor blood supply to the infected body area. Gangrene is a definite contraindication.

Chymotrypsin, like trypsin, is a pancreatic proteolytic enzyme. While sharing the fibrinolytic activity of trypsin, chymotrypsin has no clotting action on blood. However, it posesses as great or greater antiinflammatory activity. It is combined with trypsin in Tryptar Ointment (Armour). Chymar Aqueous (Armour) is crystallized chymotrypsin in sodium chloride for intramuscular administration. Each cc. contains 5000 Armour units. Chymar is also put up in oil. Sensitivity to chymotrypsin is less common than with trypsin. Enzeon (Breon) is a suspension of chymotrypsin in sesame oil for intramuscular use. It acts systemically by an undetermined mechanism to relieve local inflammation and edema. A particular use of chymotrypsin is to facilitate extractions of the eye lens in cataracts. The enzyme appears to act selectively on the zonula of the eye, causing lysis of the fibers supporting the crystalline lens. Chymotrypsin aqueous solution (Chymar) has recently been used with favorable results as an adjuvant for the relief of a variety of dermatoses.

The theoretical and practical limitations of trypsin and SK-SD as thrombolytic agents has focused interest on fibrinolysin itself as a possible therapeutic aid. While the presence of this intrinsic fibrinolytic enzyme was demonstrated in human blood many years ago, no satisfactory isolation techniques from human and bovine plasma were available until recently. Profibrinolysin (plasminogen) is now obtained from the globulin fraction of the plasma proteins. Streptokinase is necessary for activation to fibrinolysin. The SK is easily removed subsequently. Unlike trypsin, which attacks many different type proteins, fibrinolysin uses fibrin as its major substrate. Profibrinolysin will probably soon be marketed by Ortho Pharmaceutical Corp. as Pro Actase. Activated by SK, it dissolves fibrous exudates in wounds and adjacent tissues, aids in removal of necrotic tissue, debris and exudate, improves drainage, decreases infection and consequently promotes healing. In treatment with Pro Actase, it is desirable to add hyaluronidase to act on the hyaluronic acid of the intercellular substance. The drug may be avail-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able in a combination package with hyaluronidase. Plasmin is also being made in experimental quantities by Merck Sharpe & Dohme and Parke, Davis.

Papain, derived from the papaya fruit, contains enzymes similar to pepsin, but acts over a wider range in acid, neutral and alkaline media. This broad *p*H range has made it useful as a protein digestant. The great variability in the protein-digesting power of commercial lots of papain is a disadvantage. The availability of the enzyme from many houses has prompted clinical trials in most of the indications for which trypsin and SK-SD have been used. The results have not been as good in most cases. Papain is useful in cleaning up sloughing wounds, but causes considerable irritation to tissues. Papain, activated with cysteine, has met with considerable success in the treatment of burns. In the treatment of thermal wounds, one of the objectives is to prevent the formation of excessive granulation tissue so as to eliminate the amount of eschar formation. Although surgical removal of the eschar usually leaves a clean, healthy, granulating surface that will heal, such procedures could not be used in a national emergency. Papain has exhibited debridement effects similar to SK-SD and trypsin. In a comparison of papain, bromelin, ficin and salicylic acid in the treatment of burn eschar, ficin in pyruvic acid and salicylic acid was best.

The enzymatic debridement and wound healing promotion properties of papain have prompted its use in certain vaginitis preparations as well as in the treatment of chronic otitis media. Panafil Ointment (Rystan) is a combination of papain, urea and chlorophyll. The rationale is that papain digests the devitalized tissue with no adverse effect on viable tissue, the urea denatures proteins to make the necrotic tissue more susceptible to enzymatic digestion, and the chlorophyll derivatives control inflammation, thereby making continuous enzyme therapy possible, and to promote the growth of healthy granulations.

Pancreatic dornase (Dornavac, Merck Sharp & Dohme) is a stabilized preparation of the enzyme, desoxyribonuclease, derived from beef pancrease. Aerosol therapy with the drug is indicated for the specific purpose of reducing the tenacity of pulmonary secretions in disorders characterized by mucopurulent exudation in the tracheobronchial tree. The rationale of the treatment is that desoxyribonucleoprotein is an important constituent of purulent exudate, and it determines the character, viscosity and amount of sediment of such exudates. Desoxyribonuclease, whether of streptococcal origin (streptodornase) or of pancreatic origin (pancreatic dornase) is a pus-liquefying enzyme and is capable of degrading desoxyribonucleoprotein. Dornavac is supplied in a vial with vacuum tight closure, each vial containing 100,000 units, together with a 2 ml. vial of sterile diluent.

Other proteolytic enzymes such as ficin and bromelin may shortly become important. Bromelin has displayed some interesting action in reducing the severity of dysmenorrhea pain. Ficin exhibits more keratinolytic power than the other proteases, but its considerable toxicity must be reckoned with. It appears of value in debridement of burn eschar. A better keratinase is sought by all dermatologists for aid in epidermal and dermal penetration. The only known enzymes that will digest keratin are a proteinase in the intestine of the clothes moth larva, and fungal enzymes from certain Actinomyces strains and from *Microsporum gypseum*.

Debricin (Johnson & Johnson) is a wound debriding ointment currently being test marketed as a treatment for burns. Debricin ficus protease contains a proteolytic enzyme derived from Ficus latex. Distribution is now confined to four areas, because of difficulties in obtaining adequate supplies of the enzyme, which comes from Colombia. National marketing will be delayed until further clinical background is obtained.

Hyaluronidase, prepared from mammalian testis, is used for its action in hydrolyzing mucopolysaccharides of the type of hyaluronic acid, the chief cementing substance of connective tissues. This makes the enzyme useful in promoting the diffusion of solutions injected hypodermically. Thus, hyaluronidase is used where large quantities of fluids must be introduced subcutaneously (hypodermoclysis), in local anesthesia, in urography to speed the absorption of radioopaque dye, and in certain other clinical conditions where it is desirable to increase the tissue penetration of injected fluid. The enzyme is standardized on the basis of viscosity reduction units or turbidity reduction units (T.R.U.). These units are based upon the amount of enzyme required to reduce the viscosity or turbidity of a standard hyaluronate substrate. Hyaluronidase is supplied in dried lyophilized form. For clinical use a freshly prepared solution is employed.

Neutrapen is one of the most recent of what may be a long list of single-action enzymes designed to detoxify an allergic sensitizer. Neutrapen is a preparation of purified injectable penicillinase, an enzyme which specifically destroys penicillin. It is intended for the management and treatment of allergic reactions to penicillin. The penicillinase catalyzes the hydrolysis of penicillin to penicilloic acid, which is devoid of antibiotic activity, and is nonallergenic as well. Each Neutrapen vial contains 800,000 units of penicillinase in dry powder form. Just before use, the enzyme is reconstituted with 2 cc. of sterile distilled water to yield an isotonic solution. Reports just published indicate that penicillinase has its own allergic response, as judged by a number of reported anaphylactic reactions.

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(*Continued on page 666*)

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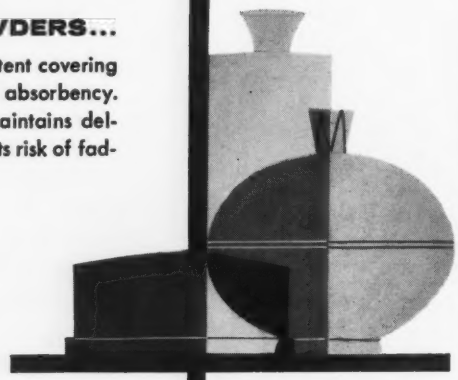

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(*Continued from page 664*)

acts in the presence of oxygen to convert glucose to gluconic acid and hydrogen peroxide. In the form of paper strips, it is an excellent diagnostic acid for diabetic patients. The presence of glucose in the urine is indicated by a color change when the strip is dipped into the sample.

The future of clinical enzymology appears bright. Some therapeutic fields have hardly been opened up. Paradoxically, there is the promising field of enzyme inhibitors to modify abnormal metabolic processes, such as the amine oxidase inhibitors useful as "energizers." There is a great need for good collagenases that would lyse the collagen and elastin of connective tissue in degenerative afflictions of connective tissue, such as atherosclerosis, characterized by excessive amounts of collagen and elastin. It is not too far-fetched to look to enzymes for their antimitotic effect in cancers. Ribonuclease has shown some small promise here, even with crude preparations. This adds up, as Gustave Martin notes, in his recent book on clinical enzymology, to the dictum that restoration of normal enzymatic systems are essential for health, and this restoration can be achieved by administration of enzymes.

LIPSTICK COLORS

(*Continued from page 583*)

that most new colors will be found to cause harm at low levels of feeding to test animals. In such cases they will be unable to meet the stringent requirements of the present law that they be harmless for unrestricted use, although in the quantities needed to color particular foods they might be used safely under tolerance limitations. This poses a serious threat to established coloring practices in the food, drug and cosmetic fields."

An industry bill introduced last year died in committee and the Secretary of the Department of Health, Education and Welfare is recommending legislation embodying the following principles: 1) It will apply to all colors, not only to coal-tar colors; 2) It should not sanction continued use of a color simply because it was in use before the law was enacted; 3) The safety of a color for food, drug or cosmetic use should be determined in advance and it should be placed on a list permitted by the FDA. The FDA should have a right to place a limit on the amount of a color that may be used or specify the products in which it may be used, or both; 4) Where necessary, the purity and safety of individual colors will be certified by the FDA and the FDA will have the authority to exempt a color from certification requirements; 5) A use of a color which will promote deception of the consumer or violations of the Food, Drug and Cosmetic Act will not be listed.

The FDA color bill is still being drafted. It does not apply to coal-tar colors only; it defines conditions

of use and specifies maximum limits of use; it provides for separate listings according to use; it does provide for provisional listings of colors now in use and for some that are now under attack. It has a number of provisions, however, that the industry does not consider acceptable. For instance, it sets limits in terms of use, not in terms of actual toxicity. This does not allow for the development of new products requiring larger proportions of color. The bill is also written so that it is possible to call for the certification of batches of cosmetics because of their color content.

According to Stephen L. Mayham, executive vice-president of the Toilet Goods Association, the Association has conducted extensive investigations on these colors and has determined that no injury could possibly happen to a consumer from their continued use in lipsticks. The Association has developed other information relative to these colors and proposes to request a public hearing on this delisting proposal at which specific recommendations with respect to the proposed order will be presented.

PMA MEETING

(*Continued from page 582*)

"There is no good reason why a firm cannot benefit individually when it acts as part of an industry as well as when it moves alone. Above all, the industry should not be weakened by fragmentation as has happened in other fields. Nor should our industry leaders be unmindful of their roles as business leaders and good citizens. To me the latter two are inseparable and are the very foundation on which freedom is built.

"The drug industry has contributed more to the preservation and comforts of life than has any other industry. But its past will be overshadowed by its future. The past offers a story that cannot be told too often, nor explored too deeply. Such a telling, however, is not simply a matter of publicity. It is also a matter of education, and of leadership, and of participation by all the members.

"This will entail, among other things, the collection of information, the seeking of consultation and the broadening of relationships with others. None of this can be done overnight."

Executive vice-president Karl Bambach told the PMA that if the drug manufacturers want to keep on using a substantial number of certified colors, they had better get together with other users of certified colors and the Food and Drug Administration and draft a satisfactory bill which can be put through congress. Thirty-three of the sixty-eight certified colors now restricted to drugs and cosmetics are used by PMA members, he said. "Under present interpretation of the law," he said, "most, if not all, artificial

(*Continued on page 670*)

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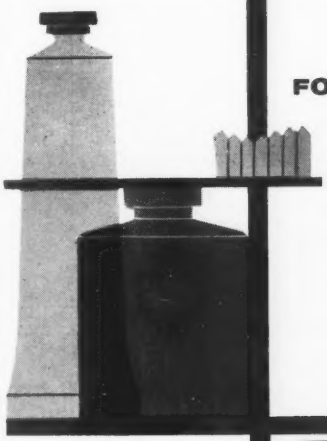

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Trade Literature

D&O Catalog

Dodge & Olcott, Inc., 180 Varick Street, New York City 14, offers its spring price catalog of essential oils, aromatic chemicals and specialties, flavor and perfume bases, certified colors and dry soluble seasonings. Prices, descriptions and general information are included, as well as addresses and phone numbers of branch offices.

Ethylene Amines

The Dow Chemical Company, Midland Michigan, has issued a new 65-page book, Ethylene Amines, which the company considers to be the first book providing comprehensive coverage of ethylene amine chemistry.

The book discusses the properties, reactions, uses, first aid techniques, handling and storage and includes property graphs and a bibliography covering patent and use sources. Among the applications described are those in the textile, paper, petroleum and coatings industries.

Salicylaldehyde Bulletin

The Dow Chemical Company, Organic Chemical Intermediates Sales, Midland, Michigan, has published a new booklet on salicylaldehyde, which provides information on its physical properties, reactions, uses and toxicology, and a bibliography of reaction and use references on the chemical intermediate.

WHO Report

The Ninth Report of the Expert Committee on Addiction-Producing Drugs of the World Health Organization, Technical Report Series, 1959, No. 160, has been issued. Available in English, French and Spanish for 30 cents, the report contains recommendations relating to the control of five narcotic drugs and drug-containing preparations.

Imagination in Glass

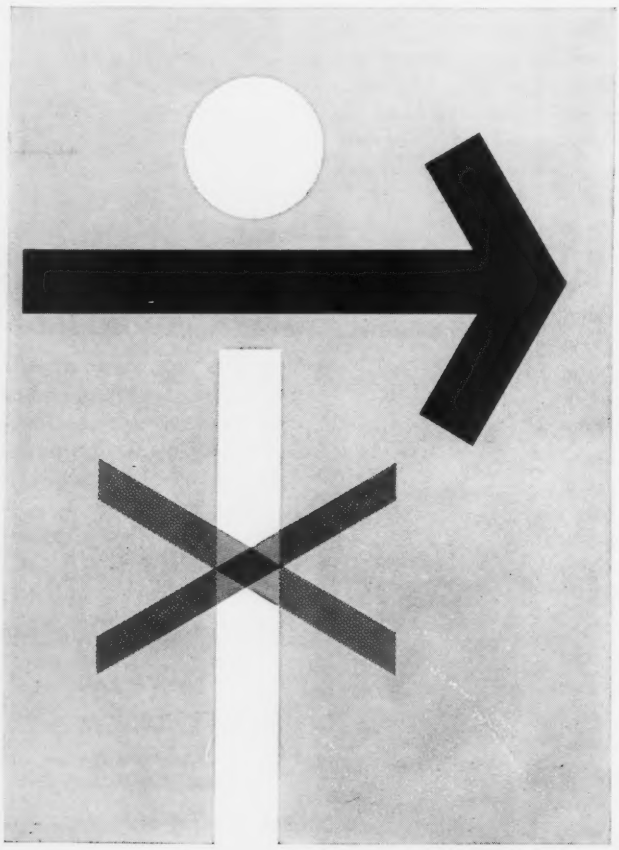
Imagination in Glass, a new booklet providing information on the new Advance Styling & Design Center recently set up by the Hazel-Atlas Glass Division of Continental Can Company, is now available to producers from the division, 15th and Jacob Streets, Wheeling, West Va.

The booklet illustrates the wide range of packaging problems creatively handled at the center, which coordinates activities such as package engineering, graphic art, model making, manufacturing and consumer motivation research.

Esters

A new, 48-page booklet outlining the properties and applications of 26 esters has just been published by Union Carbide Chemicals Company, Division of Union Carbide Corporation, 30 East 42nd Street, New York City 17.

The booklet contains three sections—on esters used primarily as solvents, on specialized esters such as ethyl formate and ethyl silicate, and on basic reference data—including 27 graphs and tables charting evaporation rates, viscosities of resin solutions and the like, as well as a detailed bibliography and reference section.



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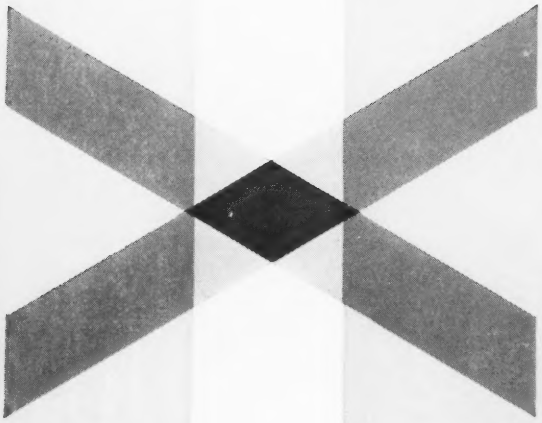

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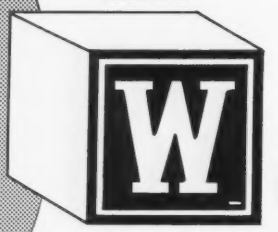

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AMERCHOL PARK — EDISON, N. J.

(Continued from page 667)

colors will be soon be banned when used in this way. I believe that many important drugs made by PMA members are colored by one or more of these certified colors which may later be banned. . . . The way to insure continued use of artificial colors in drugs is for congress to pass an amendment to the Federal Food, Drug, and Cosmetic Act authorizing the FDA to permit the employment of harmless quantities under certain conditions. There are good reasons, in the public interest, for the use of harmless quantities of safe colors in drugs. I understand the Food and Drug Administration agrees with this position."

PMA general counsel John K. Worley said that if drug firms are worried about the impact of the three recent U. S. Supreme Court decisions on corporate income taxes in Georgia, Minnesota, and Louisiana, they might be certain that their tax worries are only beginning. Unless legislative help is coming from congress or the state legislatures, which is most unlikely because states and municipalities are starving for revenue, the corporate tax burden will become increasing heavy, he said.

Commenting on congressional investigations of the drug industry, Mr. Worley said:

"From congress appears imminent at least two, if not more, full-dress investigations of our industry. History indicates that these may entail great cost with no gain to our member firms and no corresponding benefit of substance to the public. They will indeed form grist for the political mills. I maintain we have nothing to fear. We have done no wrong, and indeed considerable good. Our industry has prospered, to be sure, but only with a substantial increase on the profit side for the public health. I believe our several member firms and the industry can prove this on request as well as clear the good word 'profit' of the shame with which political demagogues have for years been endeavoring to cloak it."

In addition to Chairman Graham, vice-chairman Loynd, and President Smith, the following officers were elected: three vice-presidents, namely Herbert W. Blades, president of Wyeth Laboratories Division, American Home Products Corporation; John T. Connor, president of Merck & Co.; Dr. E. Gifford Upjohn, president of The Upjohn Company. Treasurer, S. B. Penick, Jr., president of S. B. Penick & Company; general counsel, John K. Worley. George W. Bengert, president of Norwich Pharmacal Company, was elected to the board of directors to fill the unexpired term of John C. Leppart, who has retired from the industry. H. Marschalk of National Drug Company was elected to replace Henry S. McNeil of McNeil Laboratories, whose parent company, Johnson & Johnson, is already represented on the board. Other directors elected are: Lloyd C. Duncan of Lederle Laboratories; Alfred E. Driscoll, president of Warner-Lambert Pharmaceutical Company; D. Mead John-

(Continued on page 672)

Reader's Questions . . .

Hair Cream: *I would appreciate your assistance in developing a cream-type hair dressing. The product I'm looking for should hold the hair in place and give a shine to the hair without making it too greasy.* BUFFALO

I see little objection to the adaptation of a relatively standard beeswax-borax cold cream formula to this use. Beeswax should be reduced somewhat and replaced in part by paraffin to improve the luster on the hair. Cetyl alcohol, ozokerite and other agents that have a dulling effect, should, of course, be avoided. The usual low viscosity oil may well be replaced by a much higher viscosity grade and petrolatum will improve the ability to hold hair in place. An important point is the nature of the emulsion. Since it seems to be considered desirable to have a cream that separates during use, the proportion of borax should be reduced to about one-third of the usual to maintain the emulsion in at least a partially inverted state.

Gums are occasionally included in the cream, but on the whole seem to serve no special purpose. They cannot have much hair-fixative value in the presence of excess oil, tend to make the hands somewhat sticky and are not needed to stabilize a properly formulated cream. A number of other additives, such as lanolin and its fractions and derivatives, fatty acid esters, polyglycol synthetics, may all be useful in conferring some desired properties.

Finally, as a research suggestion involving a pretty complete reformulation of the cream, hair conditioners like some of the alkanolamides and cationics may be helpful in keeping hair under control. This does not just involve the addition of these substances to a cold cream formula, since cationics are incompatible with the beeswax soap emulsifier. Borax must be replaced with nonionic emulsifiers and the other components rebalanced to produce an acceptable cream. Addition of glyceryl monostearate (not including soap emulsifier) may sometimes improve the stability of this type of beeswax cream and polyoxyethylene fatty acid esters of fatty alcohol ethers can be useful.

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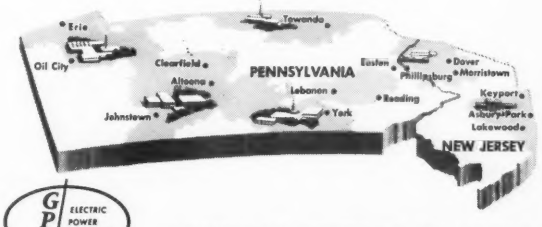

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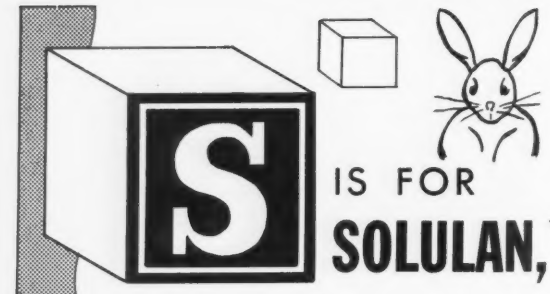

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AMERCHOL PARK — EDISON, N. J.

(*Continued from page 670*)

son, of Mead Johnson & Co.; John E. McKeen, president of Chas. Pfizer & Co.; John G. Searle, president of G. D. Searle & Co.; John J. Toohy of E. R. Squibb & Sons; and Kenneth F. Valentine, president of Pitman-Moore Company.

PHARMACEUTICAL AEROSOLS

(*Continued from page 585*)

proved very effective in the treatment of asthma. The patients, in general, stressed their appreciation of a controlled dose, the ease of administration and the effectiveness.

The following additional advantages are attributable to this type of product: the medicament cannot be spilled; the adapter is unbreakable and easy to clean; and the whole unit is convenient for carrying in a pocket or handbag. The author concludes that the results of this study indicate that this method of treatment is superior to nonpressurized aerosol therapies and that it merits further investigation as a means of administering medicinal agents.

Goldstein, *et al.*[4] describe their work relating to the physiologic studies using isoproterenol in bronchospastic diseases. Isoproterenol (1-(3′,4′-dihydroxyphenyl)-2-isopropylaminoethanol) was investigated as an 0.25 per cent ethanolic aerosol solution as well as an 0.25 per cent aerosol suspension of this medicament.

Zohman, *et al.*[5] performed spirometry tests before and after the administration of a nonalcoholic aerosol form of isoproterenol as well as placebo aerosols on 11 patients with bronchial asthma and 15 patients with chronic pulmonary emphysema. Isoproterenol was found to have a bronchodilator effect independent of the alcohol-containing dispersing vehicle, the mode of nebulization or the raising of secretions.

2. *Uses and abuses of pocket nebulizers.* Harris,[6] commenting on the use and abuse of pocket nebulizers in the treatment of asthma, concludes that of the drugs used in pocket nebulizers, epinephrine and isoproterenol are exceedingly efficient in relieving acute paroxysms of asthma. There is no question about the absence of toxicity of epinephrine or isoproterenol. Their side effects are evanescent, are well known and are acknowledged to be practically negligible. Actually, the argument centers around the fact that the efficiency of these drugs delivered by pocket nebulizers deters the patient from undergoing or completing an investigation to ascertain the cause of the attacks. The patient is thereby delayed from securing more adequate or specific therapy. One wonders if this contention is sound. It would seem that, after fully explaining to the asthmatic patient that relief obtained by drugs sprayed into the bronchial tree by a pocket nebulizer is only temporary (something, incidentally, that the patient quickly learns by himself) and, furthermore, that it is being

prescribed only for symptomatic relief, most patients would still desire further investigation to obtain more continuous and perhaps complete relief from attacks.

Overdosing is obviated when an aerosol with a single, measured dose each time is used. With the administration of a standardized constant dose, a single inhalation usually suffices, although two inhalations occasionally are necessary. Too frequent use of the nebulizer is prevented by describing to the patient the occasions when he should inhale the aerosol.

A pocket nebulizer should be placed in the same category as tablets that can be carried in the pocket or purse of the patient for immediate symptomatic relief. for instance, the nitroglycerin tablets taken by the cardiac patient when an attack of angina appears imminent.

3. *Cardiovascular effects minimum by inhalation.* Kaufman, *et al.*[7] studied the effects of isoproterenol hydrochloride on the circulation of normal man and concluded that consistent increases in cardiac output and blood pressure were noted as in subcutaneous administration of the drug. Less marked effects occurred after sublingual administration, and none followed aerosol inhalation. Cardiovascular effects following aerosol administration were minimal.

4. *Bronchodilators and antibiotics.* A. L. Maietta[8] evaluated phenylephrine hydrochloride and isoproterenol hydrochloride in mucosal edema in bronchial asthma and obtained uniformly excellent results among 38 patients with bronchial asthma. These patients received a total of 235 vasoconstricting aerosol treatments. When bacterial allergy (bronchial asthma precipitated or aggravated by a respiratory infection was suspected, 50,000 units of crystalline sodium penicillin G in 1 cc. of an isotonic solution of sodium chloride was aerosolized with either phenylephrine or isoproterenol with marked benefit to the patient.

5. *Induced asthma.* Since the above discussion relates wholly to the treatment or mitigation of asthma and its corollary aspects, it is extremely interesting to note Herxheimer's[9] article relating to the induced asthma in man. According to Herxheimer, it seems certain that emotional or nervous factors play a part in the varying course of bronchial asthma irregularly punctuated by remissions and relapses. Factors other than the emotional or nervous also contribute to the fluctuations. Herxheimer found it possible to induce artifically mild asthma attacks in man and to abort them at will. These induced attacks were used for investigation and for comparison of the effects of various methods of treatment. When an aerosol containing an allergen is inhaled there follows a typical reaction whose attributes depend on the nature and amount of the allergen inhaled. A characteristic feature of all these experiments, except those done with fungi, is that the attack never comes on during or immediately after the inhalation.

If a moderate attack develops, the first sign appears from two to three minutes after the end of the

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inhalation; then the attack slowly worsens, and presently it has to be aborted artificially. According to the author the advantages are many. The aerosol impinges directly on the bronchus and does not have to pass through the circulation before acting on it. Its effect can thus be recorded as soon as it occurs. When an attack develops, its course can be followed, and it may be aborted at any stage by administering aerosol from another nebulizer switched into the circuit.

The Herxheimer procedure can best be used to determine whether a given allergen can produce asthma in a particular patient and, if so, to reveal the type of the attack. The method also enables us to study the action of other asthmogenic substances such as histamine and acetylcholine. These attacks differ from those of allergic asthma in their sudden onset and their greater intensity. They begin with their greatest intensity and rarely get worse; after a few minutes the vital capacity begins to rise again and the attack passes off spontaneously. The inhalation of aerosols can be used in the treatment as well as the diagnosis of allergic states.

6. *Epinephrine for allergic drug reactions.* Seltzer[10] considers an aerosolized epinephrine the best drug to use in allergic drug reactions. He states: "In spite of the advent of and the advertisements of injectable antihistamines, corticosteroids, penicillinase, etc., the first choice for severe allergic reactions should be epinephrine. The most important factors in the treatment of severe allergic reactions (aside from prevention, which is a topic in itself) are using the proper drug, epinephrine, and getting it into the system early enough—seconds literally count in this emergency."

According to the author the aerosolized epinephrine has been used by patients during intravenous pyelograms with complete relief of many of the adverse symptoms which in previous injections had caused considerable distress. It has also been found very effective in cases of acute and chronic angioneurotic edema in which there is swelling of the epiglottis or larynx. One patient who had suffered severe anaphylactoid reactions to the sting of a bee has been stung twice without systemic reactions upon using the aerosol immediately after the insect sting. Seltzer concludes that the aerosolized epinephrine should be a part of the doctor's anaphylactic kit.

7. *Steroid therapy for rhinitis and polyps.* Silcox[11] studied the use of hydrocortisone alcohol intranasally on 174 patients who suffered from allergic rhinitis, allergic rhinitis with polyps, or acute rhinitis. All patients' symptoms were either severe or moderately severe. The medicaments were administered by means of a plastic spray bottle. Patients were told to instil three squeezes of the spray bottle into each nostril four times a day. This method delivers about 0.2 cc. of the medication to each nostril. Various formulas were evaluated involving concentrations of hydrocortisone alcohol in isotonic base ranging from 50 mg. per 100 cc. of base to 2 mg. per 100 cc. of base. Additionally, hydrocortisone alcohol was evaluated in combination with two vasoconstrictors: hydroxyamphetamine hydrobromide, 0.5 per cent, and phenylephrine hydrochloride, 0.125 per cent. Control formulas evaluated consisted of the two vasoconstrictors alone and the isotonic saline solution.

The results from the use of the hydrocortisone suspension show that this steroid in suspension form was of definite value in those patients with polyps, of limited value in patients with allergic rhinitis and of little or no value in patients with acute rhinitis. Solutions of hydrocortisone ranging from 2 to 20 mg. per 100 cc. of isotonic saline solution proved effective in the reduction of polyps and of marked value in allergic rhinitis. The fact that the extremely dilute solution resulted in a significant shrinkage of polyps in four of seven patients was considered striking evidence of the steroid's efficacy in this indication. The combination of vasconstrictors with hydrocortisone alcohol did not alter the efficacy of the steroid; however, it did affect the patient's subjective response to the medication. Forty-four patients claimed an immediate subjective relief. Twenty hay fever patients claimed the medication was effective in reducing sneezing. The greater efficacy of this formula in acute rhinitis may be attributed to the shrinking action of the vasoconstrictors, which may permit the steroid to be more efficiently distributed on the mucous membrane.

The results of this study indicate that not only does a topically applied hydrocortisone alcohol solution exert a beneficial effect on the allergic nasal membrane, but also that it can exert this effect even when given in extremely dilute concentrations. The possibility of lowered resistance to infection resulting from this action of large doses of steroids would seem to be minimized, if not eliminated, by the topical use of the dilute solution of hydrocortisone alcohol.

Subsequently, in an attempt to achieve a formulation which would be an equally effective local treatment for allergic rhinitis and polyposis and, hopefully, a more effective treatment for bacterial infections causing and/or accompanying nasal inflammation, Silcox evaluated the addition of antibiotics to the hydrocortisone vasoconstrictor components. The new formula had the following composition:

Hydrocortisone alcohol	20 mg. per 100 cc. of isotonic base
Hydroxyamphetamine hydrobromide	0.5%
Phenylephrine hydrochloride	0.125%

and the following antibiotics:

Gramicidin	0.005%
Neomycin sulfate	0.100%
Polymyxin B sulfate	2,000 units per milliliter.

These antibiotics were chosen because they have been clinically established for the local treatment of

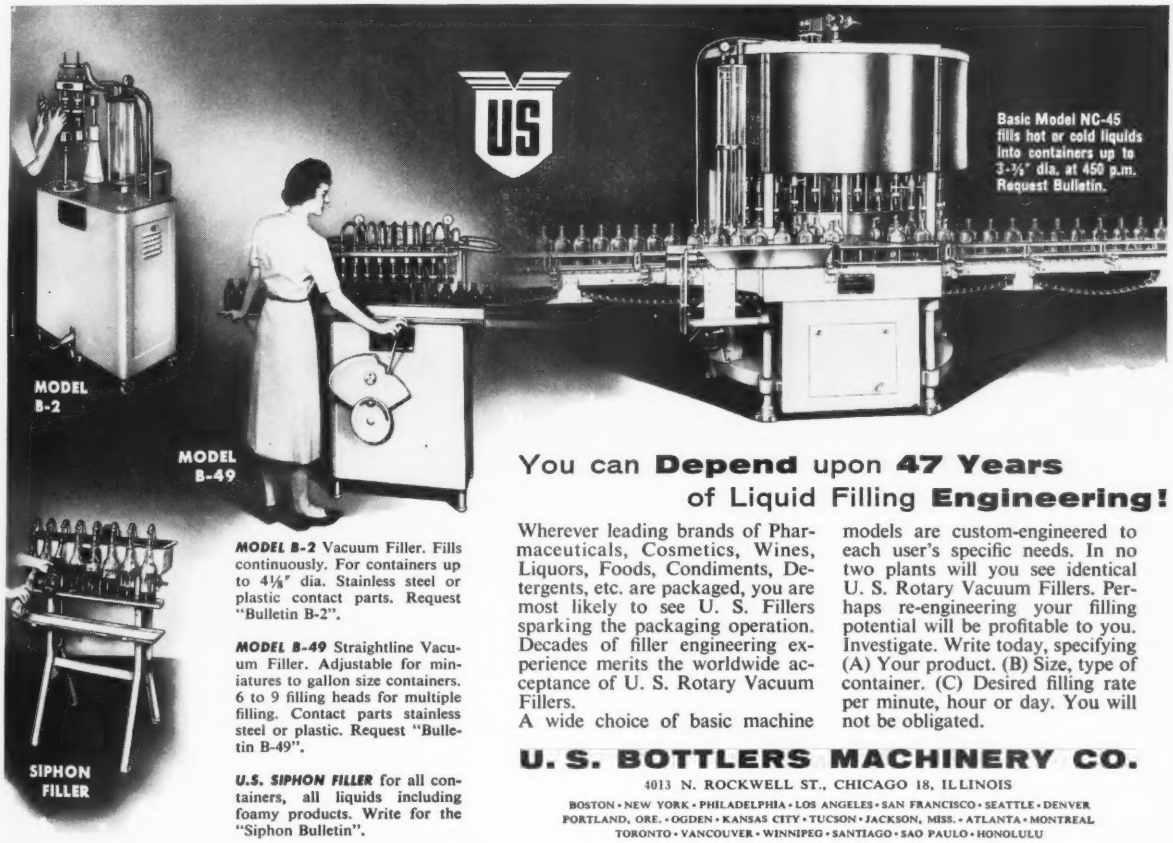
upper respiratory infections and because their use eliminates the danger of sensitizing the patient to antibiotics, which are frequently used systemically in serious infections.

The hydrocortisone vasoconstrictor antibiotic formula showed a marked superiority over other formulas for treating bacterial infections causing or accompanying nasal inflammation. Evidently the extremely dilute hydrocortisone content of the preparation was not sufficient to inhibit appreciably the action of the antibiotics, and the combination of antibiotics proved very effective in treating bacterial infection. It would seem, then, that this formulation is the treatment of choice for acute rhinitis and for allergic rhinitis accompanied by infection. It should be pointed out that this study made use of plastic squeeze bottles as the means of administering the medication. The advantages of converting these formulas to metered-dosage aerosol packages seem obvious inasmuch as: (1) a controlled dose of the medicaments would be obtained per application; (2) a controlled spray pattern could be obtained readily; (3) a controlled particle size is possible with aerosols of this nature; and (4) an hermetically sealed package presents advantages.

Results of Silcox were corroborated by Persky.[12] The medication was essentially the same as that used by Silcox, consisting of hydrocortisone alcohol, 0.002 per cent, hydroxyamphetamine hydrobromide, 0.5 per cent, phenylephrine hydrochloride, 0.125 per cent, and a combination of the antibiotics gramicidin, neomycin sulfate, and polymyxin B sulfate.

For most patients the medication is a well tolerated, effective treatment which not only provides an immediate and long-lasting (five to six hours) relief of nasal congestion, but also is of considerable value in decreasing bacterial activity and in ameliorating nasal inflammation. The relief of nasal congestion was not accompanied with tissue rebound and provided first a decrease in, and later an absence of, bacterial activity and nasal discharge.

Pennypacker[13] investigated a preparation combining a very dilute (0.020 per cent) solution of hydrocortisone alcohol with two vasoconstrictors, hydroxyamphetamine hydrobromide, 0.50 per cent and phenylphrine hydrochloride, 0.125 per cent in the treatment of hay fever. Children were given the medication in drop form and adults received the solution in a plastic squeeze bottle. Both methods of administration deliver approximately 0.2 cc. of the medication to each nostril. The author concluded that the preparation is a valuable adjunct in the treatment of ragweed hay fever, and that the dilute solution of hydrocortisone alcohol seemed to ameliorate the allergic tissue reaction. Hydrocortisone alcohol and not the acetate had been used in this as well as in other studies because, as the author states, "Attempts at our hospital and elsewhere have demon-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strated particulate suspensions of hydrocortisone acetate—at least in the concentrations heretofore used—cannot be uniformly dispersed on membrane surfaces, nor do they lend themselves well to aerosolization." In all fairness to Pennypacker, his study was conducted in 1953. Since that time it has been possible to prepare particulate nonagglomerating suspensions of hydrocortisone acetate in fairly high concentrations in aerosol form. Tuft,[14] in his study on the topical use of hydrocortisone alcohol in the treatment of ragweed hay fever, comes to the same conclusion as did Pennypacker, using the same formulation and administering techniques.

It appears that the negative features inherent in a plastic squeeze bottle, including the dose which varies with the pressure brought to bear on a squeeze bottle, the possibility of contamination of the medicaments within the squeeze bottle, the lack of a uniform spray pattern and particle size, could be obviated completely by administering the medication from an aerosol container with a metered delivery. In addition, the aerosol would permit the use of drugs which are insoluble in the media used to obtain a product suitable for squeeze bottle application.

Aerosols for the Detection of Lung Cancer

A relatively simple and rapid method for diagnosing lung cancer in the physician's office has been brought about by aerosols.[15] The inhalation of finely sprayed, warm particles of propylene glycol causes the patient to bring up sputum from the areas of the lung previously inaccessible. Microscopic examination of the sputum will reveal cancer cells, if present.

It is believed that the clinical evaluations described above relative to medicaments currently used in, or applicable to, aerosol form by means of a pressurized container with a metered valve afford an insight into the vast amount of work accomplished in this area.

(*This is the first of two parts of Mr. Prussin's paper.*)

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(*Continued from page 589*)

10	Oil myrrhe distilled.
10	Tincture musk 4/128
5	Tincture ambergris 4/128
2	Ethyl vanillin
2	Oil estragon
3	Oil clary sage
3	Phenylacetaldehyde dimethyl acetal
40	Diethyl phthalate
1,200	

This E.048 composition differs from E.047 in that it is specifically a lavender fragrance for colognes and toilet waters. It is not suitable for use as a base, nor is it especially desirable for extracts and high-class work. It is not practical in cosmetics. Where a lavender fragrance *only* is requested, this is the type of composition that should be set up.

FOUGERE

Fougere is the French word meaning fern. There are many species of fern, with various shadings of fragrance. In general, the fougere fragrance is characterized by a substantial quantity of a light citrus note, with lavender and a touch of spiciness having an underlying woodiness. The combination of lavender with a considerable amount of bergamot and a bit of oak moss strikes the basic note of fougere. To this may be added a range of light compositions for floweriness. It is a peculiarity of the fougere class that the introduction of the heavy florals such as jasmin and tuberose tend to cause a veering towards the chypre class. With this limitation, a wide range of variation can be created within the framework of the fougere type.

Since the fougere components quite closely follow those of lavender, the usual listing of "use" classifications will be dispensed with. The following is a fougere type which illustrates the general design.

FOUGERE E.049	
35	Oil bergamot natural
15	Lavender 40/42
5	Oil lemon California
8	Ionone AB
8	Amyl salicylate
5	Oil vetyvert Bourbon
8	Oil geranium Bourbon
5	Oil patchouli
5	Citronellol
5	Ethyl salicylate
3	Oak moss resin
1	Oil carrot seed
2	Oil estragon French
1	Citronellyl oxyacetaldehyde
5	Oil sandalwood East Indian
8	Hydroxycitronellal
6	Linalyl acetate
125	

This type of composition is the foundation for many men's colognes and lotions. It can be varied extensively by manipulating it with lavender components, and by the use of floral bases and floral adjuvants.

New mown hay (also known as "Foin Coupe") is somewhat similar to fougere in regard to its liberal

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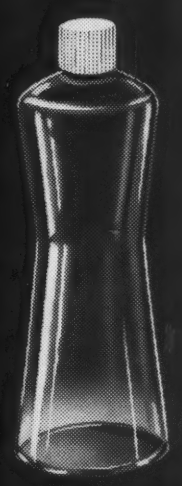

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use of bergamot and lavender, and many of the ingredients of both the lavender and fougere classifications. The most characteristic chemicals for new mown hay are coumarin and dimethyl hydroquinone. The following is an illustrative composition.

	FOIN COUPE E.050
60	Lavender 40/42
80	Oil bergamot natural
10	Dimethyl hydroquinone
10	Ethyl salicylate
10	Oil ylang Bourbon
8	Oak moss resin
10	Linalool ex bois de rose
40	Hydroxycitronellal
5	Patchouli oil
20	Oil sandalwood East Indian
6	Vetyvert acetate
40	Coumarin
5	Oil clary sage
3	Alpha ionone
2	Methyl ionone
10	Amyl salicylate
3	Benzyl acetate
2	Amyl cinnamic aldehyde
4	"Tepyl" acetate
2	Vanillin
10	Oil geranium Bourbon
6	Musk ketone
5	Musk xylol
5	Aldehyde C-12 MNA 10% in DEP
2	Citronellyl oxyacetaldehyde
17	"Lignyl" acetate
375	

A few chemicals occasionally used as special adjuvants for the new mown hay compositions are: heliotropine, anisic aldehyde, acetophenone, benzophenone, cuminic aldehyde, cyclamen aldehyde, diphenyl methane, ditolyl methane, methyl naphthyl ketone, phenyl propyl aldehyde, paramethyl hydratropic aldehyde, methyl and ethyl benzoate, paramethoxy acetophenone ("Acetanisol"). The jonquil and narcissus effects in the form of compositions are interesting as floral specialty adjuvants.

CHYPRE

The name *chypre* is derived from the French name of the island of Cyprus in the Mediterranean Sea, where even today certain of the components of chypre are grown.

The chypre fragrance is an extension of the fougere, created by the addition of such heavy-odored items as vetyvert acetate, the artificial musks (xylol, ketone, ambrette), sandalwood, Patchouli, opoponax, coumarin and vanillin. Usually more oak moss is used in chypre compositions than in fougeres. For floralcy, jasmin, orange flower, neroli and extra heavy versions of lilac and rose are generally used, although almost any floral can be fitted in if it is made heavy enough. Throughout the chypre design, the accent is on heaviness and sweetness. From the layman's viewpoint, chypre would be described as an "oriental" version of the fougere.

Since the purpose classifications of the components of the highly important classification chypre group differ substantially from those of the lavender and fougere, they are shown below.

Basics. Vetyvert oil Bourbon or Java, vetyverol, vetyvert acetate, sandalwood East Iindian, santalol, santalyl acetate, patchouli natural and terpeneless, oak moss resin or absolute, oil bergamot.

Blenders. Terpinyl acetate and propionate, heliotropine, linalool, linalyl acetate, linalyl propionate, orris resin, oil of calamus, angelica root oil, clary sage oil, ambrette seed oil, celery oil, citronellol, citronellyl acetate, citronellyl propionate, di-N-amyl carbonate, phenylethyl alcohol, cinnamic alcohol, tolyl alcohol, hydratropyl alcohol, estragon oil, para-cresyl ethyl ether, oils of cedarwood and cypress, cedrol, cedrenol, para-cresyl caprylate.

Adjuvants. Coumarin, vanillin, dimethyl hydroquinone, diethyl hydroquinone, methyl ionone, ionone AB and alpha, ylang Bourbon, cananga oil natural and terpeneless, eugenol, isoeugenol, cinnamic aldehyde, alpha methyl cinnamic aldehyde, isosafrol, methyl salicylate, ethyl salicylate, isobutyl salicylate, amyl salicylate, hexyl salicylate, methyl cinnamate, ethyl cinnamate, isobutyl cinnamate, amyl cinnamate, cinnamyl acetate, cinnamyl propionate, cinnamyl isobutyrate, oil bergamot, oil orange (sweet and bitter), dimethyl ionone, oil mandarin (Italian), oil pimento, oil mace, oil nutmeg, oil coriander, oil black pepper, oil lemon, oil limes, rhodinol and its esters, citronellol and its esters, geraniol and its esters, amyl and isobutyl benzoates.

Fixatives. Resins of tolu, benzoin, labdanum, castoreum, styrax and cyste, benzyl isoeugenol, benzyl salicylate, phenylethyl cinnamate, phenylethyl phenylacetate, citronellyl phenylacetate, benzyl phenylacetate.

Naturals. Rose absolute, rose otto, neroli, orange flower, tuberose, jasmin, immortelle, mimosa, genet (broom), cassie absolute (occasionally used as a green nuance).

The various aliphatic aldehydes used in the chypre design should be employed discreetly. It is a peculiarity of the chypre that if aldehydes are used too liberally, it will begin to resemble the Chanel No. 5 type, particularly if jasmin compounds are used extensively in the make-up. Since the Chanel No. 5 fragrance is probably one of the most frequently imitated of the French perfumes, this tendency will minimize the originality of the chypre effects being designed.

The following is an illustration of the chypre fragrance.

CHYPRE ORIENTAL E.051

185	Oil bergamot natural
100	Oak moss resin
120	Coumarin
25	Vanillin
18	Musk ambrette
35	Musk ketone
4	Phenylacetic acid
8	Vetyvert Bourbon

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8	Methyl ionone
7	Hydratropyl alcohol
45	Rhodinol
20	Castoreum absolute
18	Ylang Bourbon
4	Methyl salicylate
4	Rose otto
4	Oil estragon
8	Oil patchouli
5	Lavender 40/42
10	Petitgrain South American
3	Cinnamic aldehyde
6	Isoeugenol
15	Oil bitter orange
35	Oil lemon California
7	Aldehyde "Veronol" 10% in DEP
9	Aldehyde C-14 10% in DEP
8	Civettiane (Perfumery Associates)
15	Amyl cinnamic aldehyde
10	Benzyl propionate
15	Tolyl acetate
30	Hydroxycitronellal
10	Benzyl acetate
9	Diethyl phthalate
800	

The foregoing formula represents an elaborate chypre, and demonstrates an extensive use of the various components previously noted. It is a useful material as a specialty for the variation of other compositions. Shown below is a very elemental chypre base. This is not a finished effect. It is merely a "skeleton" that must be elaborated upon by the perfumer. It is the chypre effect in its simplest form, and should be floralized and sweetened.

	CHYPRE BASE E.052
40	Oil bergamot natural
40	Linalool
30	Sandalwood East Indian
10	Oil bitter orange
5	Oil lemon California
12	Ylang Bourbon
8	Methyl ionone
4	Ionone AB
15	Heliotropine
2	Ethyl vanillin
8	Oak moss resin
6	Musk xylol
2	Oil star anise
4	Coumarin
2	Civettiane
2	Oil clary sage
8	Benzyl propionate
6	Amyl cinnamic aldehyde
20	"Lignyl" acetate
1	Diethyl phthalate
225	

The preparation of a chypre effect presents several technical problems because of discoloration. The various resins, oak moss and labdanum in particular, are intensely colored and will therefore transmit their color to the soap. Vanillin and ethyl vanillin offer discoloration troubles because of their oxidative properties when standing in the presence of alkalies. Therefore a considerable compromise must be made in the design of a chypre for soap or bath salts. The following is such a formula.

	CHYPRE FOR SOAPS AND BATH SALTS E.053
10	Musk xylol
50	Coumarin
50	Petitgrain South American
10	Lavender 40/42

5	Oil labdanum distilled 10% in DEP
2	Cinnamic aldehyde
10	Isoeugenol
2	Hydratropyl acetate
2	Galbanum oil 10% in DEP
80	Oil bergamot natural
20	Citronellol
10	Phenylethyl alcohol
20	Geranyl acetate
5	Methyl ionone
150	Terpinyl acetate
50	Benzyl acetate
50	Amyl salicylate
20	Patchouli oil natural
4	Diethyl phthlate
550	

Note in this E.053 formula how the discoloring materials have been compromised. An extraordinarily large amount of coumarin has been used to compensate for the lost sweetness of the vanillin. The labdanum problem was solved by using the colorless, but more expensive, distilled oil. The loss of oak moss was compensated by using the greenness of hydratropyl acetate and galbanum, and the woodiness of methyl ionone. The floweriness was increased by a liberal use of amyl salicylate.

The amber fragrance is technically related to the chypre series, both in construction and use. Amber compositions, such as the one shown below, are consistently used in chypre make-up as sweeteners and fixatives.

	AMBER FOR CHYPRES E.054
6	Amyl salicylate
5	Aldehyde C-12 MNA 10% in DEP
6	Isobutyl phenylacetate
10	Phenylacetic acid
10	Tuberyl acetate (Verona Chemical)
14	Civettiane (Perfumery Associates)
15	Benzyl propionate
20	Ylang Bourbon
20	Alpha ionone
20	Yara-yara
20	Heliotropine
20	Hydratropyl alcohol
20	Absolute castoreum
20	Aldehyde "Veronal" 10% in DEP
20	Oil myrrhe distilled
25	Musk xylol
30	Musk ketone
30	Petitgrain South American
30	Citronellyl oxyacetaldehyde
40	Oil lemon California
42	Amyl cinnamic aldehyde
45	Musk ambrette
60	Oil bitter orange
60	Methyl cinnamate
65	Coumarin
55	Methyl ionone
70	Oil labdanum absolute 10% in DEP
80	Ethyl vanillin
87	Phenylethyl phenylacetate
1,000	

The Amber E.054 is useful in all branches of the LFC group, and particularly for the preparation of men's cologne fragrances. It adds a touch of "luxury" to various floral fragrances such as carnation and jasmin.

The classifications of the LFC group must not be regarded as inflexible. Cross linkages between the subdivisions can produce striking effects. Lavender-

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fougere linkages develop interesting and bright cologne types. In many instances a limited quantity of a finished chypre composition may be used as a modifier in this linkage. Conversely, the fougere group will also provide a freshening contrast in a chypre that tends to be too heavy. Considering the various cross-linkages possible and the number of floral adjuvants available, the prospects for creating attractive fragrances in the chypre group are better than in all the others combined. The best proof of this point is the high percentage of chypre types that are successful in commerce. The ratio of popular chypre fragrances as opposed to the florals, is about five to one.

AMERICAN FACTORIES

(*Continued from page 591*)

the horizon is socialized medicine in some form. Our working people—and they have the votes—have for a long time now been reading about free medical treatment and free medicine both in England and in Russia. They will demand as much in the not distant future.

I fully expect that, while we may not go as far as England has toward socialized medicine, we shall go a long way and, as a first step, there will be some form of price controls on medical products. As in England, doctors will not be permitted to prescribe high-priced, trademarked specialties that do not differ in essential composition from other trademarked products or from standard stuff. In England trademarked specialties that are truly unique may be prescribed and can command, within reasonable limits, whatever price the manufacturer puts upon them.

In my opinion, we not only face state and federal government price limitations, we also face intensified competition here from our own friends in the trade, and from foreign invaders lured by the lucrative and extensive American market. Increased competition means two things, both costly: higher marketing costs and better, faster service to the trade. How are you going to meet higher costs, and almost certain profit percentage decline, and competitive prices and, at the same time, provide faster and better services, unless your factories and your internal and external organizations are as efficient as they can be made?

DENTIFRICE SURFACTANTS

(*Continued from page 594*)

dreds of materials, and he is usually able to lay out his experimental formulation program covering the complex interactions with a set of simultaneous multiple parallel studies that gets the answers in a reasonable length of time.

Since the synthetic surfactants have become avail-

able, dentifrice formulators have explored the possibilities of soap-free formulation extensively, and have been able to widen greatly the range of materials which can be used to solve the problems of dentifrice formulation. Thus, several polishing agents incompatible with soap have been introduced and are widely used, and flavor constituents incompatible with soap are now available to broaden the range of flavor ingredients.

Although sodium lauryl sulfate and sodium N-acyl sarcosine are the dominant surfactants used in tooth paste, other anionic surfactants have been used and are being used in appreciable volume. In particular, sodium lauryl sulfoacetate, dioctyl sodium sulfosuccinate, the sodium salt of sulfated monoglycerides of hydrogenated coconut acids and the sodium salt of sulfonate coconut monoglycerides should be noted as important in dentifrice formulation.[2]

The specifications for dentifrice grades of anionic surfactants are somewhat tighter in some respects than specifications need be for the same surfactants intended for other purposes. For example, dentifrice grade sodium lauryl sulfate should have low unsulfated laurol content, because of the effect of this component on flavor, and its chloride content, should be held down because of the effect of chloride ion on the corrosion of aluminum tubes.[3]

Certainly one of the more interesting examples of the importance of properties, other than the gross surface active properties of an anionic, lies in the dentifrice field. Some anionic surfactants interfere with enzymatic processes yielding acids associated with the development of dental caries, and it has been reported that at least one of these is effectively adsorbed on the dental plaque to give reduction in acid formation persistent for an appreciable time. This rational basis for a dentifrice effecting reduction in dental caries incidence has underlain a series of very exciting developments in dentifrices.

The awareness of the industry of the possibility of developing dentifrices that are increasingly effective in holding down the incidence of dental caries, and its willingness to underwrite the research necessary for further progress in measuring effectiveness and improving products is heartening evidence of the vitality of the toilet goods industry.

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PACKAGING COSMETICS

(*Continued from page 601*)

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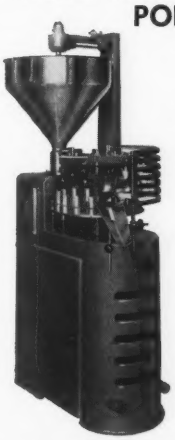

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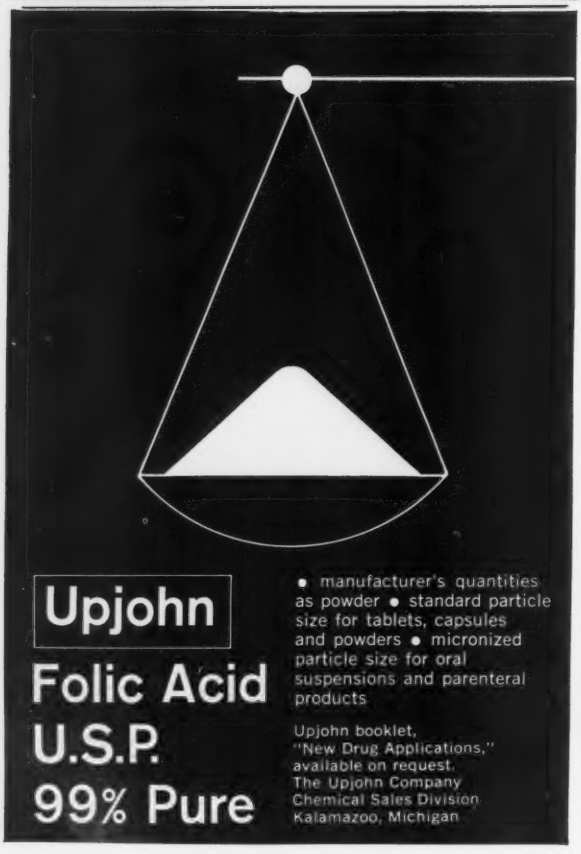
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ther, if all our products bore a family resemblance, advertising on major products would help sell the unadvertised items. In total, we currently have fourteen Pond's products, most in several sizes, and each would require design changes if they were to contribute to a unifying whole. But our creams were the first consideration.

Should we throw away our old packaging completely and start from scratch? If not, what parts should be kept? When we stripped the old jar of cap and label, some interesting points were revealed. The jar itself has modern, simple lines creating a feeling of grace and beauty and, white as the over-all background color, if used effectively, could project cleanliness, freshness, quality. Moreover, the flattened oval shape of the jar has an important functional purpose. In variety store displays, cream jars are usually stacked on their sides; the design of the Pond's jars guarantees that the label will be squarely on the surface viewed by customers. We decided to keep the old jar, which is manufactured by Hazel-Atlas Division of Continental Can Company and by Wheaton Glass Company.

We now called in a package designer, Frank Giannoto & Associates, Inc., and provided a complete review of our situation, including product sizes and prices, production methods and costs; channels of distribution; competition; advertising support and sales. We outlined our immediate packaging objectives for Pond's creams and discussed our long-range thinking for adapting a single design motif to all our products.

After the basic design for the Pond's cream label and cap were developed, a depth research study was conducted with the new package to see if we were achieving our desired objectives. The same methods were used as those in the preliminary study, so that we would have a basis for comparison. The results were definitely positive, and the finished package will appear on the market by July first.

The colored cap with visible threads has been changed to a white, straight-sided one. In appearance, it seems to combine with the jar in an unbroken line and gives the illusion of a larger, cleaner package. It is manufactured by the Hazel-Atlas Division of Continental Can Company.

The label, which is supplied by the Lord Baltimore Press, has been redesigned in both shape and format, and the uncomplicated "manikin" motif, as we have come to call it, has a graceful, flowing line with immediate impact value. Our studies of in-store situations show that it is easily and quickly identifiable under almost any selling condition. You might say we have a dual advantage in our new design, because store clerks as well as customers will see Pond's now, and miss it when it's sold out. We believe the result will be better stocked shelves, which of course pays off in sales.

Another key factor in our selection of the manikin

motif is that it lends itself to adaptation, on shelf packers, on shipping cases and on floor displays. More important, it is being interpreted in a variety of exciting design variations to strengthen the fashion and cosmetic appeal of our makeup, hand care and after-bath products. Most of these package designs are still in production stages, but within the next year we hope to have succeeded in creating a modern, unified brand image for the present Pond's line.

As was explained earlier, we learned from our original research that we had two essential elements on our side from the beginning: Pond's company image and Pond's product image of reliability and quality. To these we have added a third: modern cosmetic packaging with display appeal. By going one step further and giving all our packages a family resemblance, we are increasing the sales potential of the entire Pond's line.

Packaging is the most important factor linking a product with advertising at point-of-purchase. But advertising, no matter how extensive, can only hope to get across one major idea at a time. Consequently, rather than scatter our ammunition on all fourteen products, we are stressing the benefits, quality and appearance of only a few, in the belief that the visual similarity among our new packages will now carry an endorsement of quality and performance from one product to another and encourage multiple sales.

We believe related packaging will work even under self-service selling conditions, where products are usually grouped according to use rather than as a line, by virtue of an immediately recognizable family resemblance that broadens our display space.

In the case of drugstore outlets, Pond's new packaging ties in with a merchandising concept recently adopted by major chains in an effort to increase cosmetic sales and profits, namely, the promotion through line display of a middle-priced, mass-merchandised cosmetic line which will strike a balance between the high-priced items sold only by cosmeticians and the lower-priced items sold only on a bargain basis.

Pond's fits into this concept of an intermediate line, not only in having a tradition of quality without being beyond the reach of any income group, but also having been backed for more than 50 years by continuous national advertising. If the products are displayed together, the drugstore customer who is impulse buying, which is the way most cosmetics are sold today, will be more inclined to buy related Pond's items, thus boosting sales.

Of course, increasing one's share of market should not be confined entirely to the repackaging of already familiar products, and we have also been planning new products, of which three are still in test market and the fourth is being introduced nationally only this month.

On the national scene, we have Pond's Moisture Base, a protective, non-greasy moisturizing makeup

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foundation. Use of the manikin motif places Moisture Base immediately in the Pond's family, yet the predominance of gold and black in the label also gives it a distinctly individual identity.

Still in test market are two liquid creams, representing our entry into one of the most competitive areas of the cosmetic market at the present time. We decided to enter this market with some strong consumer advantage that would clearly indicate our products were not in the "me too" category. We found one in packaging; we would offer the first face creams to flow from pressure containers. Thus we would provide the convenience and economy of push-button dispensing, and the assurance that our products, under air-tight conditions, would remain pure, unchanged and untouched until completely used up.

Our decision was reached about a year ago when the aerosol industry had just succeeded in commercially dispensing nonaerated preparations from pressure containers by using nitrogen under 90 pounds of pressure as the propellant. Because we were told that only cans could sustain 90 pounds of pressure, we asked our packaging designer, Frank Gianninoto & Associates, to make a can look as pleasingly feminine as possible.

But when we were ready to test market our flowing creams, we learned that the Wheaton Glass Company had successfully tested nitrogen loading in plastic-coated, boston-round bottles, demonstrating that the glass container was safe even when dropped. It balloooned out if it broke, but did not explode. The nitrogen didn't expand enough to be dangerous.

To change to glass then meant the complete discarding of our work to date. However, we were convinced of the packaging advantages in a self-service selling market and decided on plastic-coated glass.

This time, a great deal more than the right label was required for the package design. We needed a graceful bottle, an actuator, an overcap to protect the actuator in shipping and at point-of-sale and, finally, the new label. The valve and actuator for these two products is by Precision Valve Company; the overcap by Augusta Plastics, Inc.; and the labels by the Reliable Press.

Then came the development of new shelf packs and shippers, new display merchandisers and floor stands. Advertising was revised to show the new containers, too.

Finally, Pond's has a new product that we have handled quite differently, called Lavish. It is a rich, nongreasy facial lotion, deliberately packaged and priced to imply luxury. The bottle, decorated by Gianninoto, is ceramic spray-coated and silk-screened in two colors, and the product name, selected for its implication of extravagance, dominates the manikin design motif. The design of bottle and cap was done by Seymour H. Wassyng, now director of packaging for Joseph E. Seagram & Sons.

Lavish is competitively priced with the more expensive cosmetics sold by paid, in-store demonstrators, which Pond's does not retain. Our advertising and display material would have to carry the full selling load. For this reason, we deliberately designed our package and our merchandising aids to tie in visually with our advertising.

Since the Lavish bottle is set prominently in this full-color advertisement, we decided that the outside carton, which is supplied by The Warner Brothers Company, should project the same image, and we adapted the main illustration of the advertisement to our counter display unit for maximum impact value. Bottles for Lavish are manufactured by Carr-Lowrey Glass Company; the ceramic spray coating and silk screening by Modern Decorating Company; and caps by Armstrong Cork Company.

Doesn't Lavish defeat our whole brand concept of the medium-priced, quality cosmetic line? Not really. You see, Lavish has a special purpose: to spearhead the new cosmetic image of Pond's. In other words, we want to illustrate to American women that there is excitement, imagination, an understanding of youth, an appreciation of the sophisticated, behind any beauty product bearing the Pond's name. We believe Lavish personifies this idea and will stimulate new consumer interest in our entire line.

Today, in Pond's eighty-seventh year in the cosmetic industry, we are still looking forward to growth and change. This spirit is reflected in the new modern packaging of Pond's, better equipped to meet today's tastes, today's marketing conditions. And we at Chesebrough-Pond's believe that in overcoming the marketing problems of today, we are better equipped to meet the challenges of tomorrow.

PATENTS

(*Continued from page 615*)

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force. You should inquire of your practitioner about these costs before you decide to file in foreign countries.

Trademark Rulings

Recent trademark rulings of the Patent Office Trial and Appeal Board (TAB) and the U. S. Court of Customs and Patent Appeals (CCPA) include the following, which are believed to be of possible interest:

Penguin v. Giant Penguin. Former used on cookies held not likely to be confused with latter used for ice cream sandwiches (TAB).

Canco. Canco used for can opening devices, paper milk cartons and machinery and making cans and paper milk cartons for use in food and milk processing industries is not likely to be confused with *Canco* used on paper working machinery for use in printing and aligned trades (TAB).

Thrift-D-Lux v. Lux or Lux Launderies. The CCPA held that Thrift-D-Lux for dry cleaning services is not liable to be confused with either of the other above marks used for soap or for stores which take in dry cleaning.

Lite-Vent v. Kool Vent. These marks were held not to be confusingly similar even though the former was used for aluminum awnings and the latter for metal awnings, canopies, and marquee, in a decision by the Commissioner of Patents.

Silent Power v. Silentone. Although both marks are applied to the same goods, that is, automotive mufflers, it was held that purchasers are not likely to be confused by the two (TAB).

Myotal v. Myotal. The use of the same mark on sedative or hypnotic barbitol drug for intravenous injection to anaesthetize animals and on sedative or hypnotic barbitol drug and tablet form for use by humans was held likely to cause confusion (TAB).

Ajax v. Ajax. The use of the same mark on household laundry starch and household cleanser was held likely to cause confusion (TAB).

Yankee-Frankee v. Yankee; Yankee-Frankee v. Drakes Yankee; Yankee-Frankee v. Yankee Doodle. It was held that Yankee-Frankee used for frankfurter sandwiches is not likely to be confused with Yankee, which is used for donuts, fried cakes and fruit cakes, or Drakes Yankee, which is used for donuts, fried cakes and fruit cakes, or Yankee Doodle, used for cupcakes.

RECENT PATENTS

2,864,834—Am. Cyanamid—Pregnatetraenes.
2,864,835—Schering—Pregnatetraenes.
2,864,836-8—Upjohn—Oxy Pregnenes.
2,864,839—Olin Mathieson—Pregnatriene.
2,864,844—Eli Lilly—Stabilized Thimerosal.
2,864,852—Eli Lilly—Acylated Keto Esters.
2,865,808—Chas. Pfizer—Methylene Pregnenes.
2,865,810—R. Y. Sanders—Marked Pharmaceutical Tablet.

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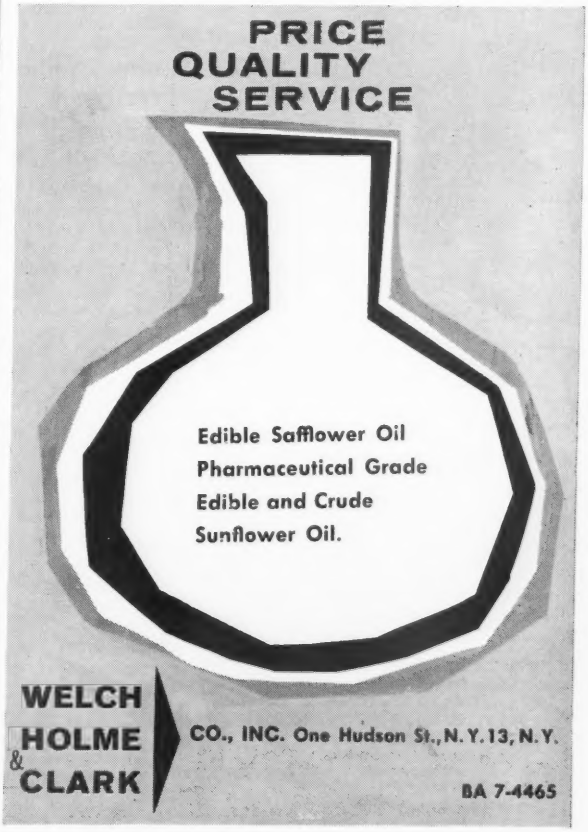

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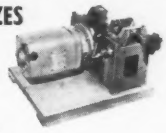

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